

SOUTHERN POWER AND INDUSTRY

Ad Index, page 124

NOVEMBER, 1952

In This Issue

REPORTS FROM SOUTHERN PLANTS

473,200 kw Capacity at Kaiser..... 52

CHALMETTE, LOUISIANA—Two power plants: 80 radial gas engines and 15 outdoor-type boilers.

Modern Materials Handling..... 58

RICHMOND, VIRGINIA—Fine, dry materials transported without use of moving parts.

Process Steam Generation..... 62

SAND SPRINGS, OKLAHOMA—Operational report on packaged unit, steam generator installation.

Instruments and Meters..... 72

COLUMBUS, GEORGIA—A Georgia Power Company engineer simplifies instrument terms.

For Full Table of Contents, See Page 3

**Water Fog for Oil
See Page 54**

Why a Horizontal Circulating Pump May Be Your Best Buy

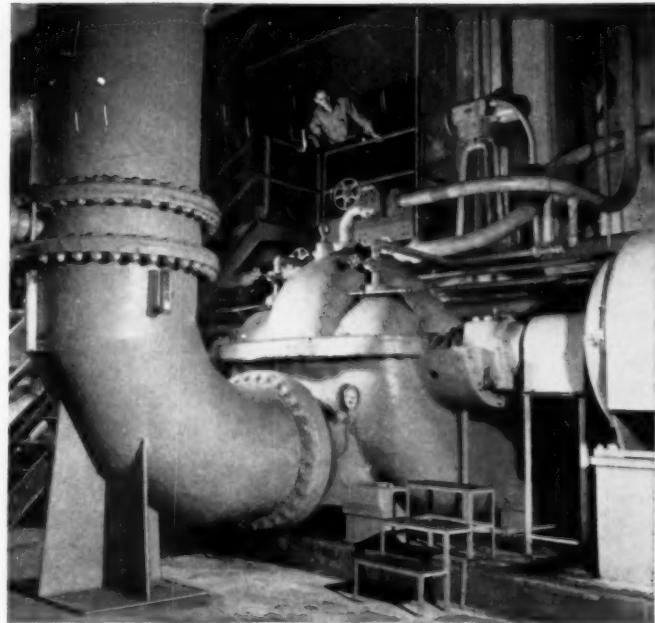
Advantages of horizontal design sometimes overlooked because of low first cost of vertical units. Maintenance costs may override initial cost differential.

TODAY, many power plant condenser circulating pumps are of the vertical design. The vertical design is usually used because it requires small floor space and is less expensive to build and install. However, this low first cost does not necessarily mean that the vertical design will give lowest cost per gallon pumped over the years.

The horizontal design does require more floor space and it is more expensive to build and install. Maintenance is so much easier and less expensive on the horizontal unit that every application should be studied to determine which is actually the more economical unit in the long run.

Low Maintenance Costs

Horizontal pumps generally are less expensive to maintain for a number of reasons. The bearings are out in the open where they can be inspected daily. If a bearing does show signs of weakness, corrective measures can be scheduled for off-peak hours since it will usually give several days warning before going out completely. Also, the short and rigid shaft of the horizontal unit is less susceptible to vibration and whipping under the unbal-



Allis-Chalmers 42 x 36 condenser circulating pump installed at Midwest power plant in 1950.

anced loads that sometimes occur in circulating service.

Servicing the horizontal unit is much easier, faster and less expensive than servicing the vertical unit. One or more bearings on the vertical unit are completely under water, which often contains sand and silt.

Unbiased Recommendations

Allis-Chalmers builds both horizontal and vertical circulating pumps and has had many years of experience with both

types. The Allis-Chalmers District Office Representative is fully qualified to discuss your power house pumping problems. He can make intelligent and helpful suggestions on pumping and many other problems in power plant design and operation. When you have a problem, discuss it with him. For more information on Horizontal Circulating Pumps, write for Bulletin 08B6146, Allis-Chalmers, Milwaukee 1, Wisconsin. A-389

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HALL LABORATORIES INC. can help you take corrective action on problems of

water procurement

In a region where water rights are precious, Hall Engineers increased the flow of a plant well at a fixed drawdown from 320 to 600 gpm. by a simple, safe chemical cleaning.

plant process water

Industry specialists associated with Hall developed an inexpensive method of reducing deposition of pitch in a groundwood pulp mill.

cooling water

When serious corrosion of process equipment threatened production of edible oil, Hall Engineers worked with Plant Engineering Department. Together, they diagnosed problem, evolved successful treatment.

boiler water conditioning

Hall Engineers provide systematic and practical service to keep boilers from coming off the line

because of troubles due to water. Using his nose, good sense, and a conductivity meter, a Hall man traced condensate contamination in food processing plant to leaking equipment. Repair of leaks stopped carryover from boilers.

water reclamation

In a complex system of plant expansions, Hall Engineers are helping to work out (1) virtual elimination of costly city water, except for drinking; (2) reduction to minimum use of well water because of dropping water table; (3) clarification of river water for process use and cooling; (4) study of all process water for maximum re-use before discharge.

disposal of waste matter

When state sanitary authorities objected to discharging plating waste into a stream, Hall Engineers recommended and helped to adapt ion-exchange to eliminate nuisance and aid recovery of metals in critically short supply.

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CONSULTANTS ON: PROCUREMENT, TREATMENT,
USAGE AND DISPOSAL OF INDUSTRIAL WATER

SOUTHERN POWER AND INDUSTRY

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CONTENTS

473,200 kw Capacity at Kaiser Aluminum—New Orleans	52
Control of Oil Fires by Water Fog, by A. Mergenthaler	54
Announcing a Notable Series of Articles	57
New Virginia Plant Produces Superphosphate	58
Fiberfrax . . . A New Refractory Fiber	61
Process Steam at South West Box Co., Oklahoma	62
Industrial Truck Cost Analysis, by Wilbur G. Hudson	64
Dual-Fuel Engines in San Antonio, Texas, Water System	68
Fuel Savings in Atlanta Laundry	70
New Boiler Plant at Alabama Tech	71
Electricity and Electric Power, by Roy W. Wages	72
Electrical System in Pilot Plant Solvent Area	76
HELPING THE MAN-IN-THE-PLANT	
Steam Cleaning for Repairs	69
Work-Saving Hints & Kinks	82
New Operating Aids	82
Flame-Plating Technique	84
Raising Plant Roof	84
Automatic Vs. Hand Nailing	86
Reel Handles Stoker Grates	88
Flexible Valve Shield	88
Building Maintenance	90
Sawing Concrete	90

DEPARTMENTS

FACTS AND TRENDS	4	NEW OPERATING AIDS	82
NEW EQUIPMENT	8	NEWS	92
BUYERS INFORMATION	16	FUTURE EVENTS	92
TIMELY COMMENTS	49	CATALOGS AND BULLETINS	119
INDUSTRY SPEAKS	51	INDEX TO ADVERTISERS	122

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Facts and Trends

FOR SOUTHERN INDUSTRIAL AND POWER EXECUTIVES

November, 1952

- MAJOR IMPROVEMENTS IN POWER EQUIPMENT to be seen at the 20th National Exposition of Power and Mechanical Engineering in Grand Central Palace, New York, December 1-6th, will reflect a marked trend toward the fully automatic generating station, according to exposition management personnel.

Feedback, coupled combination controls for the entire equipment of the central station or industrial power plant have been in use for several years as auxiliaries for existing units, but the multiplication of new equipment in this line, and its rapid assimilation by engineers have led to a new line of thinking, in which future plants are being planned from the beginning as completely integrated units.

The 20th National Power Show will feature 317 different kinds of products. Over 344 manufacturers will be represented by technical men on hand to show you the latest equipment, materials, and methods for power production, distribution and use.

- WATER FOG is considered at the present time the best means to combat a serious fire from an oil filled transformer. However, recent installations of a large number of Fogheads properly arranged to cover a power transformer effectively, have been so costly, that utility companies were confronted with the problem of higher insurance cost versus a higher protective cost.

In order to make protection more attractive from the investment standpoint, it became evident that a simpler system needed to be developed, without thereby sacrificing overall effectiveness of protection. In this issue of SP&I, Adolf Mergenthaler, Principal Electrical Design Engineer, Southern Services, Inc., presents an illustrated progress report — "Control of Oil Fires by Water Fog" — based on tests recently conducted in Birmingham, Alabama.

- DIMMING OF FLUORESCENT LAMPS to increase their versatility was demonstrated at a recent I.E.S. technical conference. By means of a light control system, developed by G.E. lighting engineers at Nela Park, the brightness of fluorescent lamps can be controlled merely with the turn of a knob.

- FLAME-PLATING, A NEW SURFACING TECHNIQUE reported by Linde Air Products Company, coats metal parts with a very thin layer of extremely hard and high melting point materials. Tungsten carbide can be deposited in the form of a thin coating that is not diluted by base metal or welding rod. Hard coating is quite ductile and has wear resistance far superior to any other plating method.

Metals other than tungsten carbide have been deposited, but bulk of research by Linde Air and field tests have been accomplished with tungsten carbide. Coating can be applied to any metal except polished chrome-plate and tungsten carbide.

Applications tested under operating conditions include cotton picking spindles, dies, seaming rolls, burnishing tools, thread gages, arbors, and saw teeth. Cost falls somewhere between that of a hard-faced part and sintered tungsten carbide. Additional data in this issue (see p. 3).

(Continued on page 6)

VU - the choice of Leaders in every Industry

Wherever steam is important for power, heating or process — you'll find C-E Vertical-Unit Boilers (Type VU) establishing new standards of reliable, efficient operation. In industry after industry, leading manufacturers are setting the pace with VU Units.

Food and Beverage companies are typical examples of the widespread acceptance Vertical-Unit Boilers find in industries everywhere. Many of the leading food processors, as shown below, are consistent users of VU Boilers.

But why list only the larger companies, when so many VU Boilers are used in smaller plants? Chiefly because the practices of the big companies form a helpful buying guide. Large companies buy boilers frequently so their experience is always up-to-date. They buy them for different plant locations and for a variety of operating conditions. Thus, they have the accumulated knowledge and broad experience needed to make sound boiler selections.

You can profit from this industry's experience — or from that of any industry that has large steam requirements. So if you need reliable, low-cost steam — from 10,000 to 350,000 pounds per hour — investigate the advanced design...sound construction...proved reliability of C-E Vertical-Unit Boilers.

Leading Food and Beverage Companies using VU Boilers in one or more plants

American Maize Products Co.

American Sugar Refining Co.

Anheuser-Busch, Inc.

Armour & Co.

J. E. Brach & Son, Inc.

Curtis Bros.

General Foods Corp.

H. J. Heinz Co.

King & Knox Gelatin Co.

Penick & Ford, Ltd., Inc.

Joseph Schlitz Brewing Co.

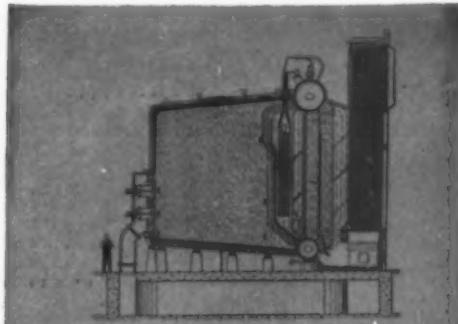
W. F. Schröffel's & Sons, Inc.

Spreckels Sugar Co.

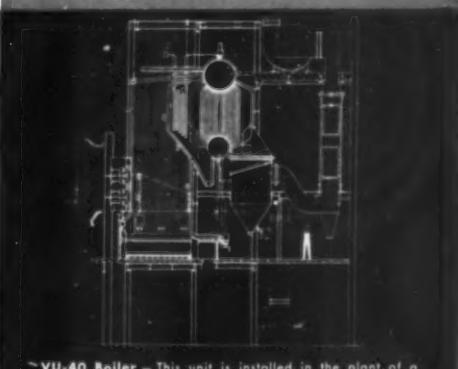
Sunshine Biscuits, Inc.

Swift & Co., Inc.

Wm. Wrigley, Jr., Co.



VU-50 Boiler — This unit is one of two duplicates installed in a brewery. They are fired with oil or gas. Capacity — 100,000 lb of steam per hr; operating pressure 560 psi; steam temperature 700° F.



VU-40 Boiler — This unit is installed in the plant of a food product company. It is fired by oil; arranged for future pulverized coal. Capacity — 60,000 lb of steam per hr; operating pressure — 250 psi; steam temp. 600 F.



VU-10 Boiler — This unit, one of three duplicates, is installed in a food processing plant. It is fired by a chain grate stoker. Capacity — 25,000 lb of steam per hr; operating pressure — 125 psi; no superheat.



B-396A

COMBUSTION ENGINEERING — SUPERHEATER, INC.

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ALL TYPES OF BOILERS, FURNACES, PULVERIZED FUEL SYSTEMS AND STOKERS; ALSO SUPERHEATERS, ECONOMIZERS AND AIR HEATERS

SOUTHERN POWER & INDUSTRY for NOVEMBER, 1952

facts and trends (continued from page 4)

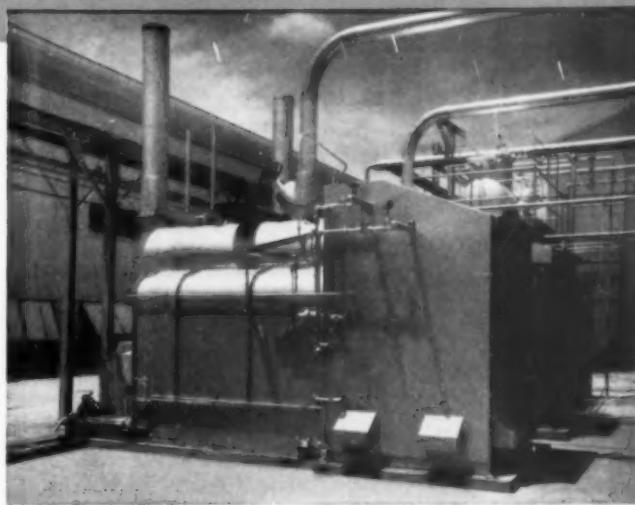
- **FIBERFRAX** — a lightweight (2 lb/cu ft) ceramic refractory fiber maintains properties at 2300 F. Manufacture of the fiber by melting aluminum oxide, silica, and modifying agents, involves the same type of electric-furnace melting that produces aluminum oxide abrasives. Insulation tests reported by The Carborundum Company, developer of the fiber, show that Fiberfrax, as compared to high-quality refractory insulating brick, can make impressive savings in weight and furnace efficiency. Other properties — filtration efficiency, electrical characteristics, and sound-deadening ability — will make it desirable for use in the aviation, electrical, papermaking, and chemical fields.
- **WIDER USE OF ALUMINUM** for electrical conductor received considerable attention during the recent copper shortage. In a "Report on Aluminum Electrical Conductor" the N.E.C.A. emphasizes that at the present time the use of aluminum in electrical wires and cables is economically feasible in only the larger sizes. Aluminum is a very good substitute for copper as a conductor provided its characteristics are taken into account. Most serious problem is connecting aluminum conductor. Choice should be based on over-all cost and use for which it is intended.
- The detailed 8 page report, covering industry wide problems and solutions, is available from either the National Electrical Contractors Assoc., Inc., 610 Ring Bldg., Washington 6, D. C., or from The Thomas & Betts Company, Elizabeth 1, New Jersey. Thomas & Betts have done considerable development work in aluminum wire and cable connectors.
- **LATEST IN NON-DESTRUCTIVE INSPECTION TECHNIQUES** is the Spotcheck Dye Penetrant Inspection method for locating defects open to the surface in metals, ceramics, plastics and other non-porous solid materials. The technique, developed by the Magnaflux Corporation, is for use where remote location, small surface areas, limited volume or the cost of disassembling equipment or other factors make use of fixed inspection equipment impractical.
- Spotcheck comes in sealed spray cans that provide their own pressure. Pumps, hose lines, spray guns, etc., are eliminated. Sealed cans prevent spilling and contamination. Technique is suited to low volume sampling inspection in eliminating the causes of defects through better process control.
- **NON-CLOGGING GRITCLOTH** — the new abrasive product of Bay State Abrasive Products Co. — is claimed to solve the old problem of clogging sandpaper and other types of abrasive papers. The product's open-mesh design lets the removed particles flow right through and the sharp abrasive teeth keep right on cutting. Production tests, reported by the manufacturer, show 10 to 15 times the life of ordinary coated papers on finishing both wood and metal.
- **PACKAGED COTTONSEED OIL PLANTS**, employing the filtration-extraction process, have been announced by the Lukeweld Division of the Lukens Steel Company, for mills of 75 tons and up. Designed to permit the smaller cottonseed crusher to economically convert to solvent extraction without pre-pressing, the process is based on successful experiments of the Southern Regional Research Laboratory, Dept. of Agriculture, in New Orleans, La.
- Besides eliminating the pre-pressing operation, the process can be used with presently installed de-linting, de-hulling, cleaning, storage, crushing roll, and cooling equipment. Operation is continuous and automatic, requiring a minimum of labor and technical supervision.

Write the editors for additional information on any of the above items.
SOUTHERN POWER & INDUSTRY, 806 Peachtree St., N.E. Atlanta 5, Ga.



REYNOLDS METALS CO.

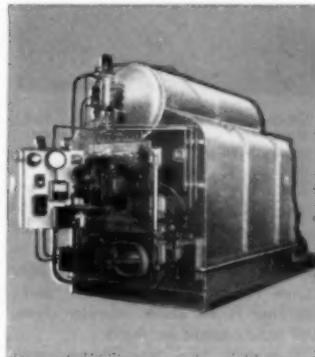
uses
Erie City
 at SAN PATRICIO PLANT ~



THESE TWO gas-fired, 5000 pounds-of-steam-per-hour Keystone Steam Generators are installed outdoors. They generate steam for process at one of the largest aluminum plants in the world. Firing equipment is protected from the elements by ventilated shelters.

REYNOLDS METALS CO.
 SAN PATRICIO PLANT
 CORPUS CHRISTI, TEXAS

KEYSTONES make steam where you use it



KEYSTONES—2-drum water tube boiler-furnaces, are completely assembled and wired at the factory and may be installed indoors or outdoors—as close to steam application as practical. They need only to be service connected, and because they are push-button operated require only part time supervision. Electronic operational and safety controls provide for smooth, efficient and dependable service. Keystones are designed to operate with gas and/or oil at approximately 80% efficiency. Keystones are available in capacities to 30,000 pounds of steam per hour—in a wide range of operating pressures.

For complete data ask for Bulletin SB-38E

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 172 Years in Steam Generation

ERIE CITY IRON WORKS • Erie, Pa.

STEAM GENERATORS • SUPERHEATERS • ECONOMIZERS • AIR PREHEATERS

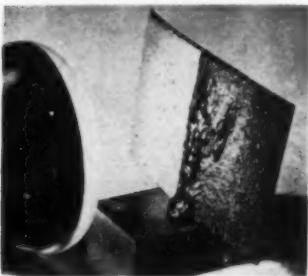
UNDERFEED AND SPREADER STOKERS • PULVERIZERS

NEW EQUIPMENT and SUPPLIES for the Plant Engineer and Operating Force

Roof Coating

M-1 THE MONROE COMPANY, INC., 10703 Quebec Ave., Cleveland 6, Ohio, has announced an aluminum-asbestos roof coating which is reputed to lower interior building temperatures 15 to 20°F and permanently prevent roof deterioration.

Known as Asbestolite, the coating is made of first quality aluminum



Tool Alignment Device

M-2 BROOKFIELD, INC., 755 Boylston St., Boston 16, Mass., has developed a new tool holder designed to hold drills, counter-bores, reamers and other tools of any diameter from 1/64 in. to 1/2 in. without the use of accessory equipment.

In use, it is only necessary to insert tool in the axially-true jaw section and tighten the jaw screws. Dead center adjustment can then be made by



Free additional information is available to readers of SP&I. Circle the item code number on one of the reader service post cards provided on pages 17-18.

flakes and high grade asphalt and asbestos suspended in a waterproofing oil vehicle. According to the company, the doubly-pigmented aluminum flakes "leaf" over the top of the asphalt and asbestos, forming an attractive, firm, metallic shield which reflects hot sun rays, seals out moisture, and is impervious to rust, corrosion and fumes.

Rays of an infra-red lamp on a sample roofing slab show how Asbestolite reflects heat and preserves roofs. One section is uncoated roofing paper; second is coated with ordinary black roofing material; and third is treated with Asbestolite. First and second sections retain heat long after the Asbestolite area is completely cooled.

floating the tool into position in the normal way and tightening the unit's locking screws.

The spherical undersides of the heads of these locking screws and the internally beveled washers into which the heads fit, provide a balanced-pressure locking assembly which maintains uniform seating and eliminates creep or shift during tightening.

Brookfield's tool holder — alignment without use of bushings or other accessories.



Lane Marking Applicator

M-3 MINNESOTA MINING & MANUFACTURING CO., 900 Frauenthal St., St. Paul 6, Minn., has announced the development of a new, light-weight applicator for applying lane marking tape to industrial and commercial floor areas.



Close-up of Minnesota Mining and Manufacturing's light-weight applicator for lane marking tape. Only one man is needed, tape being applied and rolled in a single step.

Tradename "Scotch" brand lane marking applicator, the new unit is designed to semi-automatically apply strips of plastic film tape to mark trucking lanes, aisles, storage areas, and safety zones on floors.

Formerly two maintenance men were needed, and the job required two operations—first laying the tape, then rolling it firmly in place. With the new applicator, only one man is needed, and the tape is applied and rolled in a single step.

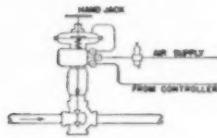
To use the new tandem wheeled applicator—consisting of one guide,

(Continued on page 10)

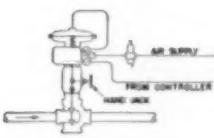
FISHER

Versatile Usage

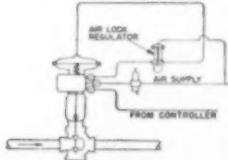
TYPICAL EXAMPLES OF **FISHER** DIAPHRAGM MOTOR VALVE WIDE RANGE ADAPTABILITY



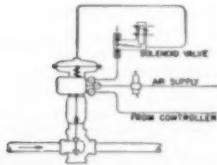
DMV with Hand Jack Operator. Allows for manual operation against spring action. Limits travel of valve. Example — Maximum opening in spring opened valve. Minimum closing in spring closed valve.



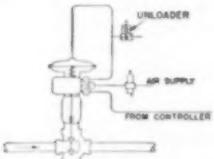
DMV with Continuously Connected Handwheel. Operator can open or close valve against controller action. Can operate valve manually if operating medium fails. Can set maximum opening or minimum closing of inner valve.



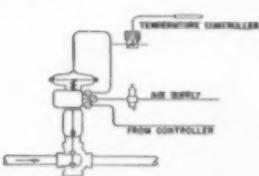
DMV with Air Lock. Should operating air supply fail, air lock regulator closes, locking pressure on diaphragm — valve remains at last position until operating air supply is re-established.



DMV with Remotely Actuated Electric Solenoid Trip Out. Valve may be fully opened or closed by unloading operating pressure from diaphragm by solenoid operation. Solenoid is actuated from manual switch or an electric tie-in circuit.



DMV with Air Cut-Out Feature. Valve member becomes inoperative, subject to manual handling to re-establish operation. When controller removes air from diaphragm, UN-LOADER opens. Valve remains in this position — UN-LOADER orifice is too large to allow air pressure to be re-established.



DMV — with Auxiliary Controller Over-ride. An auxiliary controller, such as temperature, placed in operating air line to diaphragm — can over-ride action of main control function by unloading diaphragm and taking over functional operation of DMV.

FISHER GOVERNOR COMPANY • MARSHALLTOWN, IOWA

new equipment (continued)

For more data circle item code number
on the postage free post card—p. 17

and one pressure wheel—the operator simply pushes it along the floor with the aid of a waist-high handle. The tape, in widths up to 4 inches, is fed off a roll-holding attachment, under the pressure wheel, and applied to the floor in a continuous strip.

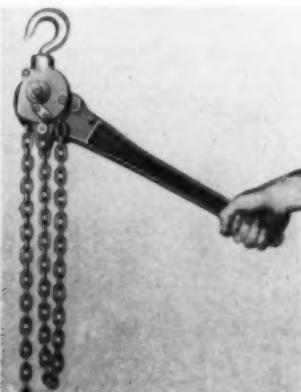
The applicator's pressure wheel is specially engineered to apply the tape smoothly to all types of floor surfaces, including crevices and depressions often found in older wood and concrete floors.

Ratchet-Lever Hoist

COFFING HOIST COMPANY,
M-4 800 Walter St., Danville,
Ill., has introduced the new
Model R coil-chain ratchet-lever hoist,
incorporating many new convenience
and safety features.

The unit retains the unique ratchet and pawl operating principle used in previous models. This type of construction, it is claimed, eliminates the necessity of friction brake. The load is suspended on the ratchet and pawl at all times, thus cannot slip, nor will the holding mechanism freeze.

Use of coil instead of roller chain in the new model is said to permit the chain to swing or wrap easily in any direction. When not under load, it may be pulled freely through the hoist head for quick adjustment. The handle operates in any position, which solves the problem of working in cramped quarters or where there is little head room. Safety stops pre-



Coffing's coil-chain, ratchet-lever hoist available in 1,500 and 3,000 lb capacities.

vent spinning of the handle. The hoist has but few parts, and can be completely disassembled in seconds with only a screwdriver.

Mica Undercutter

M-5 THE MARTINDALE ELECTRIC Co., 1334 Hird Ave., Cleveland 7, Ohio, has introduced the new Model H Mica-Miller, an all-around undercutter which is completely portable, and can be used on a wide variety of jobs, operating on either a-c or d-c.

The new model is of sturdy construction yet light in weight (7½ lb).



Martindale Electric's Model H Mica-Miller equipped with standard head. Heavy duty head is shown in insert.

It is well balanced and easy to operate. Driven by a 1/5 hp Universal motor at 2800 rpm full spindle speed with the "Standard" head, it does rapid, accurate work and cuts either "U" or "V" slots.

Three interchangeable heads are available for the Model H, which make it possible to use the undercutter with saws or "V" cutters ranging from 23/32 to 1 1/4-in. O.D. to undercut a wide variety of commutator sizes. All three heads are equipped with depth-gauges; the two smaller ones have slot guides and the Heavy-Duty head has roller supports.

Work Lamp

M-6 LINDLY & COMPANY, 248 Herricks Rd., Mineola, L. I., N. Y., has developed a lamp for all close-work operations.

A specially designed reflector, controlled by finger-tip manipulation of a plastic ring can increase the intensity of the center up to four times its



General illumination with controlled high intensity center in Lindly & Company's work lamp.

original brightness. Criss-crossing reflected rays minimize glare and make shadows barely visible. The design permits the use of a lower wattage standard frosted bulb, thus reducing heat. By locating the bulb higher in the reflector element, less interference with vision is assured.

Universal mechanical adjustments enable the light to be focused exactly where needed. Three types of interchangeable bases to choose from are: bracket base which can be bolted to machine or bench; table base—4 lb cast iron with receptacle, or universal clamp for attaching to any shape up to 3 in.

Fuel Oil Treatment

M-7 THE PEROLIN COMPANY, INC., 10 East 40th Street, New York 16, N. Y., have announced a fuel oil treatment chemical which attacks sludge and water accumulation.

The company emphasizes that power plants that burn fuel oil, particularly the heavier No. 5 and 6 grades, have experienced interference with continuous high efficiency combustion due to residual asphalt or paraffin. These tend to separate and precipitate out of the oil, resulting in clogged pre-heater tubes, spinner cups and burners and the accumulation of steadily increasing amounts of sludge in the storage tank.

The Perolin Company states that their fluid is easily applied, pouring it down the fill pipe in prescribed quantities just prior to each delivery of fresh fuel oil, thus permitting it to attack the sludge and water accumulation most readily.

It is extremely important to get rid

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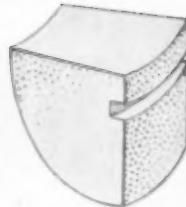
**B&W
KAOCAST
goes in
more furnaces
because...**



Versatile B&W Kaocast can be molded quickly and easily with your own labor. It can also be cast directly in place or applied with a cement gun. This unique 3000 degree refractory castable has high resistance to spalling and slag attack, low volume change and negligible reheat shrinkage. Consult a B&W Refractories Engineer on your specific applications and see how B&W Kaocast can save money for you.

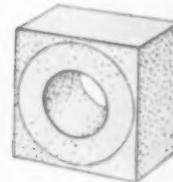
***It cuts
inventory***

Nose arches for oil heaters were formerly made with special shapes of ordinary firebrick. Switching to quickly moldable Kaocast eliminated need for expensive special-shape inventory . . . minimized delays. In addition, side by side tests proved that Kaocast far outlasted the ordinary firebrick.



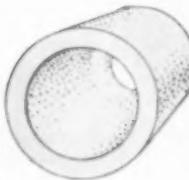
***It speeds
repairs***

Kaocast was specified for the charging front of a forging furnace, used to heat heavy pipe ends. The reason? Kaocast linings were molded faster . . . give longer service, could be made when convenient and stored 'til needed.



***It lasts
longer***

A chemical plant found that burner tile for a heating furnace made of an ordinary castable stood up only 3 to 4 months. But Kaocast burner tile stayed on the job 16 months and longer. Thousands of pounds of Kaocast have been used for this and many other applications in this plant.

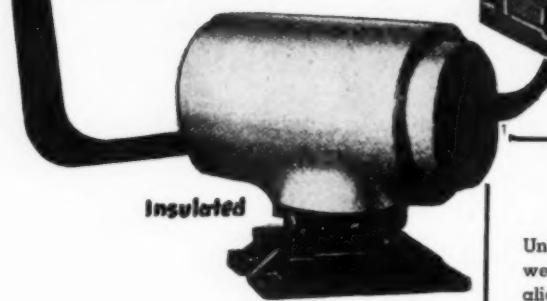


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Universal Pipe Supports hold the pipe down as well as up. They prevent pipe from getting out of alignment, which is usual when Roller Supports are used.

They permit control of expansion movement and insure the desired free action of Slip Expansion Joints so essential in tunnel and duct work.

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-to stay modern longer!

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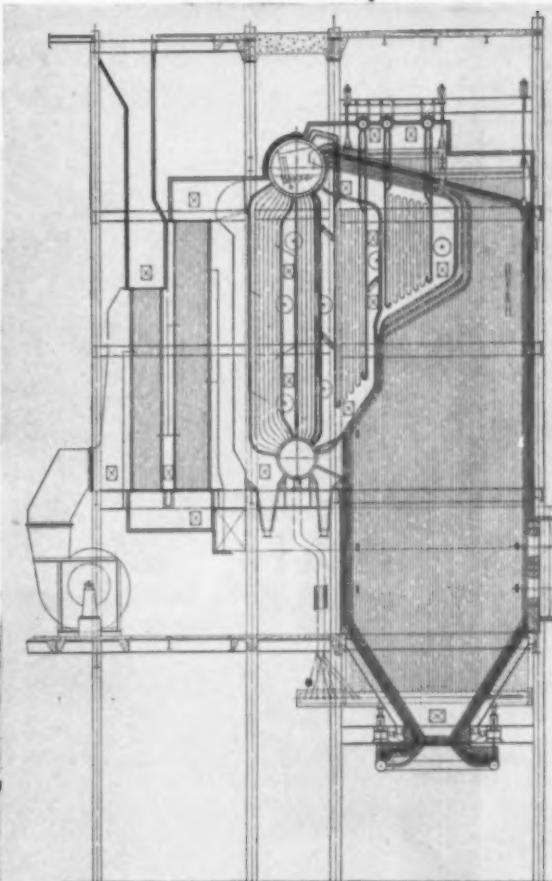
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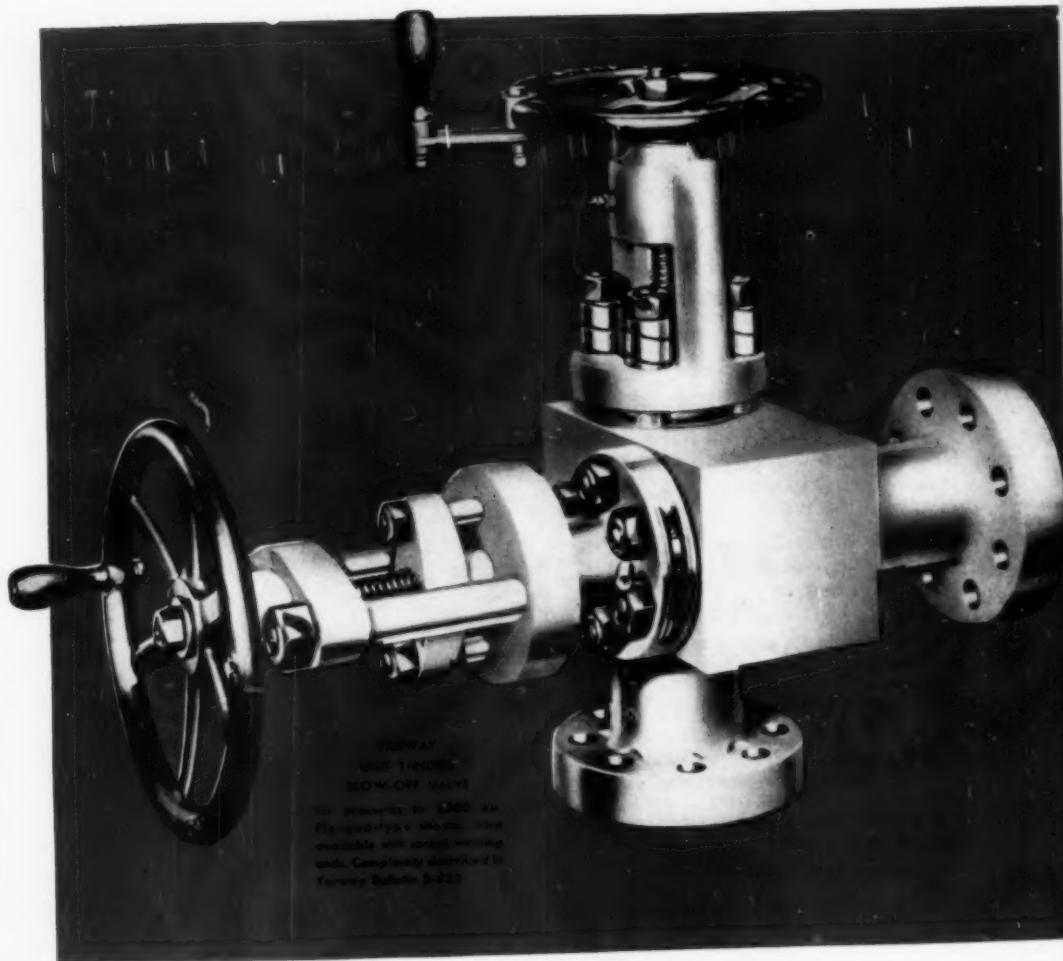
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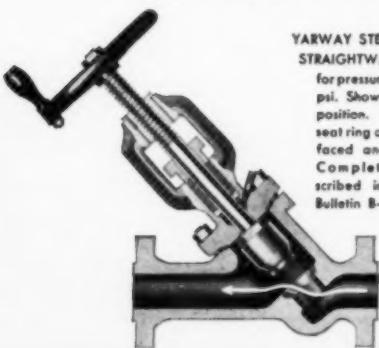
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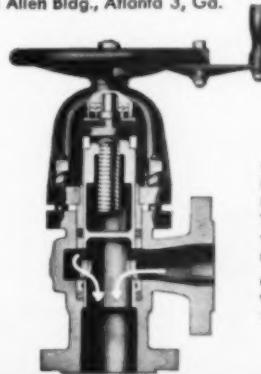
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538	562	611	616	633	656	693	713	716	724	758	764	776	804	814	851
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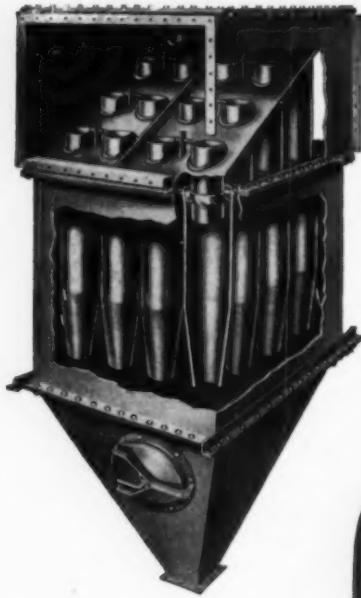
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**In dust and
fly ash recovery**

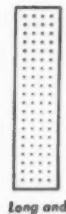
MULTICLONE COLLECTORS

**and only Multicloners
give vital advantages
like these...**



FREE INFORMATIVE BOOKLET
This 32 page booklet outlines the basic principles of centrifugal dust recovery and shows the many ways MULTICLONE advantages assure higher recovery at lower overall costs. A free copy of this booklet will gladly be sent on request. Write today!

Before you decide on any recovery equipment be sure to get complete information on MULTICLONE advantages. A letter, wire or phone call to our nearest office places this information in your hands without obligation. Get all the facts and you will get MULTICLONE Collectors!



No wonder "MULTICLONE" is the leading name in the centrifugal recovery of dust and fly ash from all types of gases, hot or cold.

No other mechanical recovery equipment has so many years of dust and fly ash recovery experience behind it... or has such uniformly high collecting efficiency... or provides so many other money-saving, space-saving advantages as MULTICLONE. The four advantages outlined below are by no means the complete MULTICLONE story, but are typical of the vital savings found exclusively in MULTICLONE equipment...

Uniformly High Recovery:

MULTICLONE's multiple small diameter tubes—made possible by its exclusive vane design—whirl the dirty gases with greater centrifugal force, thus throwing out not only the large, medium and small particles, but also a high percentage of the extremely small particles of 10 microns and less. This, coupled with the fact that there are no pads or filters to become choked with recovered material, results in a more complete recovery of all suspended materials from the gas stream.

Space-Saving Compactness:

Plant space costs money—so be sure to check space requirements carefully. As shown in the accompanying chart, the MULTICLONE requires less floor space and less cubic space than any other unit of comparable capacity and performance. Translate these savings into today's high costs for plant space and you readily see the great importance of this one MULTICLONE advantage alone!

Model	Space Requirements	
	in Sq. Ft.	in Cu. Ft.
Multicloner	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.8	3.9

Minimum Maintenance:

The MULTICLONE has no high speed moving parts to repair or replace... no pads or filters to clean or renew... nothing to choke the gas flow or increase draft losses as suspended materials are recovered. MULTICLONE draft losses remain uniformly low at all times. Further, the recovered material from an entire bank of tubes is collected in a single hopper—far easier to service and maintain than the multiple hoppers of conventional cyclone units.



**WESTERN
Precipitation
CORPORATION**

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR
RECOVERY OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Office: 1052 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. LA SALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

FOR CLASSY SHOPS

. . . OR BUSY PLANTS

THERMOLIER UNIT HEATERS

The condensed table below is a quick guide to the selection of the correct Thermolier for specific conditions. The capacities, when motors are operating at normal speeds, are based on Standard Basis of Rating: 2 lb. steam pressure and 60° F entering air temperature.

Grinnell Thermoliers are tested and they are rated in strict accordance with rules of the Industrial Unit Heaters Association.

All Thermoliers can be operated at working steam pressures up to 125 psi and steam temp. up to 406° F.

A MODEL AND SIZE FOR EVERY PURPOSE



horizontal delivery

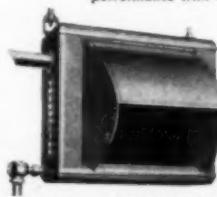


textile (horizontal delivery)



vertical delivery

performance with velocity nozzle ▶



velocity nozzle (horizontal delivery)

model	total heat delivered, Btu per hr	sq ft odr (nominal)	air velocity at exit, louvers open, in. ft. per min.
-------	----------------------------------	---------------------	--

horizontal delivery

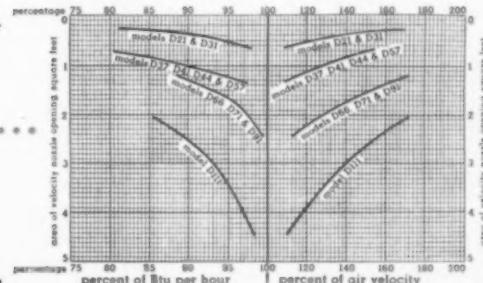
D21	35,600	148	786
D31	48,700	203	851
D37	62,200	259	753
D41	71,000	295	901
D44	84,100	350	887
D57	101,300	422	1016
D66	128,700	536	779
D71	151,700	632	977
D91	196,000	817	985
D111	275,300	1147	1048

Textile

TX70	69,800	291	826
TX110	113,700	474	877

vertical delivery

VA1042	50,800	212	1399
VA1045	73,600	307	1287
VA1065	109,400	456	1254
VA1075	145,600	607	1231
VA1101	185,000	770	1495
VA1111	257,000	1071	1631



GRINNELL

THERMOLIER UNIT HEATERS

CALL YOUR LOCAL GRINNELL DISTRIBUTOR

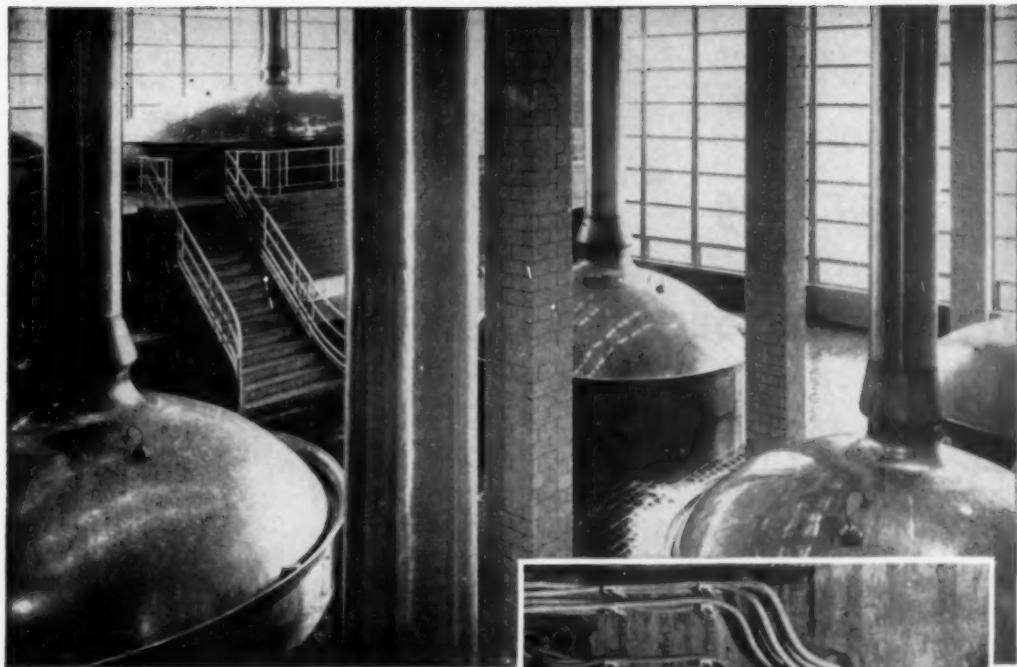


Grinnell Company, Inc., Providence, Rhode Island

Manufacturer of: pipe fittings • welding fittings • forged steel flanges • steel nipples • engineered pipe hangers and supports
Thermolier unit heaters • Grinnell-Saunders diaphragm valves • prefabricated piping • Grinnell automatic fire protection systems



ANYTHING WRONG, DOC? Most of the time the answer is "no." But if a hidden flaw does exist, where joint bars or other track fixtures interfere with close inspection by visual or detector car methods, this electronic rail "stethoscope" will tell about it through a change in the pitch of the ultra-sonic waves. This is just one more example of how we are using modern science to give ever-improved, safer service on the **SOUTHERN RAILWAY SYSTEM**.

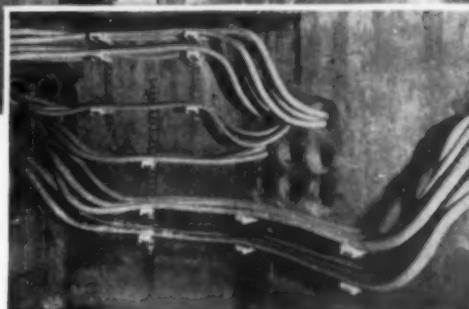


they use the best of everything
at
Anheuser-Busch

Famous the world over for its fine quality, Budweiser Beer is carefully and expertly brewed from the very choicest ingredients. Of equal importance are the equipment and techniques used; and so, throughout the entire brewing cycle, Anheuser-Busch leaves nothing to chance.

In keeping with this policy, Anheuser-Busch's new brewery at Newark, N. J., uses Okolite-Okoprene cable throughout for primary and distribution feeders. Since an uninterrupted power supply is an important factor in maintaining the famed Budweiser quality, only the best electrical cables will do — Okolite-Okoprene cables.

It's the doubly durable combination of Okolite in-



sulation and Okoprene sheath which makes these cables the No. 1 choice for electrical circuits which must not fail. The Okolite insulation provides maximum dielectric strength; the Okoprene sheath is resistant to moisture, heat, sunlight, weather, and most oils, acids and alkalies. Together, insulation and sheath applied by Okonite's strip process provide the circuit security which cannot be obtained by conventional methods of cable manufacture.

The research and engineering which go into all Okonite cables, the extremely high test voltages, the unusual and exclusive manufacturing techniques, will interest every engineer. You'll find it all in Bulletin SP-1053, The Okonite Company, Passaic, N. J.

The best cable is your best policy

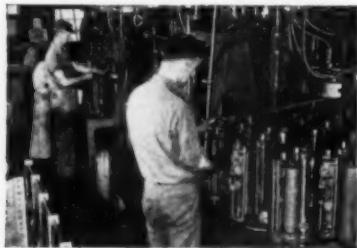
OKONITE OKONITE
SINCE 1878 **insulated wires and cables**

For Long
Trouble-Free Service
USE

LATTICE-BRAID PACKING



GARLOCK 751 (cotton) Lattice-Braided Packing for hot or cold water.



GARLOCK'S specially designed Lattice-Braiding machines.

GARLOCK



Cross section view of Garlock Lattice-Braid Packing, showing unique structural design. (Patented)

The Greatest Improvement Ever Made in Braided Packings!

The strands of Garlock Lattice-Braid packings are braided *through and through* on specially designed braiding machines. Since all strands are strongly linked together into a single unit, they are firmly held together even when the packing is worn far beyond the limits of wear of ordinary braided packings.

This exclusive lattice braiding also provides unusual flexibility and semi-automatic pressure action which keeps the packing properly adjusted in the stuffing box. Longer service with less attention.

Garlock Lattice-Braid is manufactured from flax, cotton, asbestos, wire-inserted asbestos and "Teflon"—for various types of service. Furnished in ring, coil or on reels.

Write today for the new Lattice-Braid Folder.

THE GARLOCK PACKING COMPANY
PALMYRA, NEW YORK

In Canada: The Garlock Packing Company
of Canada Ltd., Toronto, Ont.



**PACKINGS, GASKETS, OIL SEALS,
MECHANICAL SEALS,
RUBBER EXPANSION JOINTS**

SAVE

splice^{#1}

— to direct burial runs



SAVE

splice^{#2}

— to overhead runs



SAVE

splice^{#3}

— to duct runs



one length of **DURASHEATH** can do the whole job

LIGHTER. May be used in self-supporting aerial assemblies.

TOUGHER. Special neoprene jacket resists abrasion, mechanical injury, moisture, corrosion, sunlight, organic decay. No sheath electrolysis.

EASIER TO HANDLE. Light and flexible.

LESS COSTLY TO STOCK. One cable — versatile Durasheath—meets all electrical distribution needs.

Save splices and you save money! No more do you have to use one type of cable for underground distribution . . . another for overhead . . . and a third for conduits. You can run durable Durasheath* in one continuous length for all these locations.

Durasheath is normally stocked for applications up to 5,000 volts, and is available on order for higher voltages, for traffic control, airport† power and lighting, mines, industrial plants, railroads, street lighting and many other uses. See your Anaconda Representative. Ask for quotations. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

88370A

*Trade Mark

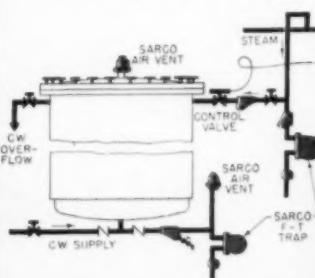
†When ordered to CAA Specification L-824

the right cable for the job **ANACONDA**[®] wire and cable

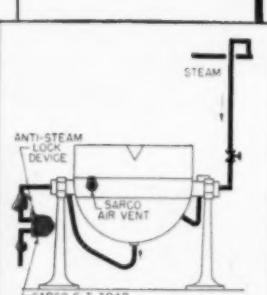
SOUTHERN POWER & INDUSTRY for NOVEMBER, 1952

1

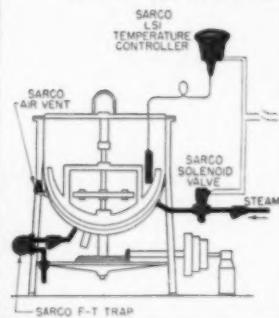
CANNING RETORT — down flow steam improves air venting. Draining and air venting automatically with Sarco equipment.

**3**

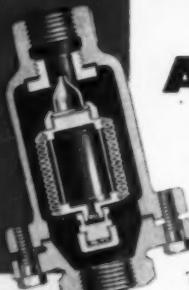
JACKETED MIXER — the Sarco Automatic System quickly removes air and condensate, holds the temperature constant.

**2**

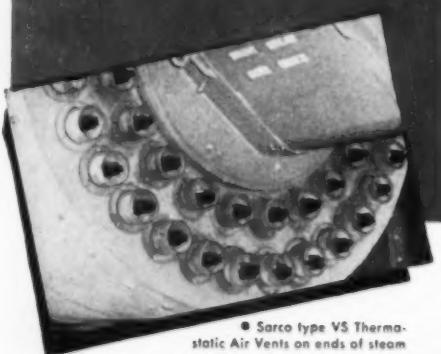
QUICK BOILING TILTING KETTLE — rapid air venting and draining with Sarco controls.



quick



• Sarco Balanced Pressure Thermostatic Air Vent, type VS, sizes $\frac{1}{2}$ " to $1\frac{1}{2}$ ", pressures to 225 psi. Very large capacities.



• Sarco type VS Thermostatic Air Vents on ends of steam tubes of rotary drier.

AIR VENTING increases efficiency of process equipment

• AIR in steam spaces cannot supply useful heat. The temperature of a mixture of air and steam is always lower than that of pure steam at the same pressure. So air in steam has the same effect as reducing the operating steam pressure.

Air and non-condensable gases in the steam space form an objectionable insulating film on the condensing surfaces. Such a film, only $1/1000"$ thick, can reduce the heat transfer rate by as much as 11%.

Quick and complete removal of air from steam heated equipment not only shortens warming-up time, it also improves surface temperatures, thus increasing production and reducing fuel consumption at the same time.

Sarco Thermostatic Air Vents . . .

are expressly designed to rid all types of process equipment of air and non-condensables and keep them that way.

When starting up, the large discharge valve is wide open, providing rapid and complete discharge of initial air. Air which collects during operation is discharged promptly, regardless of steam pressure or temperature.

For full information on where and how to apply air vents to speed production and save fuel, write for Bulletin 275-4.

SARCO COMPANY, INC.

Empire State Bldg., New York 1, N.Y.

REPRESENTED IN PRINCIPAL CITIES

Sarco Canada Ltd., Toronto 8, Ont.

SARCO MAKERS OF AIR VENTS

improves product quality and output

411

engineering...



While we could not hope to duplicate this Springtime magic which Orioles take for granted, Pipe and Tubular Products is, nevertheless, a firm of engineers. Specialists in our own craft of pipe and tube fabrication, our new, larger plant at Catasauqua, Pa., enables our engineers to produce more goods in less time . . . to serve your needs with maximum speed, and at minimum cost.

Pipe and Tubular Products has a wealth of experience in producing bent tubing elements for boilers, condensers and superheaters of carbon, alloy and stainless steels as well as welded tubing and structural fabrication. Recent additions to our plant now add a complete machining depart-

ment as well . . . and open up channels for increased service to our customers, both new and old.

Service has always been a specialty with us, and we are particularly adapted to supplying tubes for emergency repair work, usually shipping orders the same day on which they are received.

And, like the Orioles above, we, too, often fly our shipments direct to the site.

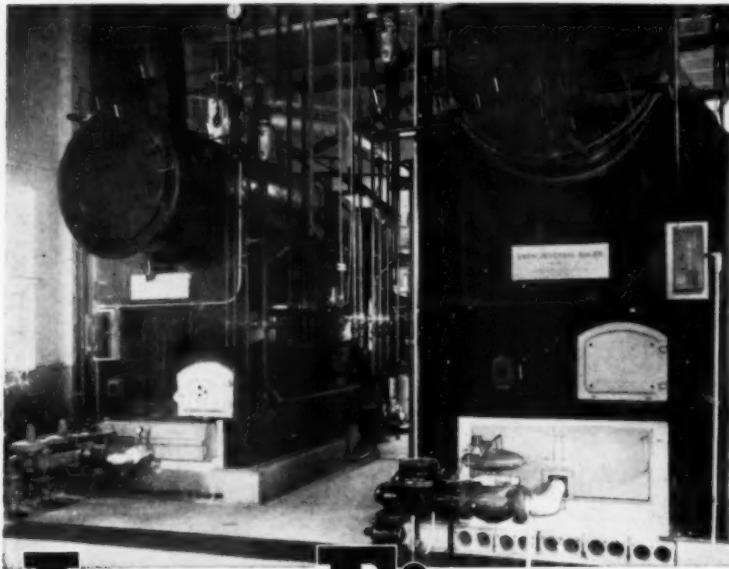
PIPE & TUBULAR PRODUCTS

INCORPORATED

Tubing  *Specialists*

OFFICE: 8504 GERMANTOWN AVENUE, PHILADELPHIA 18, PA.
PLANT: CATASAUQUA, PENNSYLVANIA

"Our Iron Fireman Gas Burners maintain a more even steam pressure and save manpower"



**says Mr. O. Carlyle Brock
President, Sanida Sanitary
Farms Dairy, Inc.
Erie, Pennsylvania**

"Our original boilers were coal fired, and since changing to your gas burners, we can maintain a more even steam pressure and are experiencing considerable savings in manpower. Our load changes quite rapidly and at no time have we been held up for lack of steam. We are also able to maintain a clean boiler room which is quite important in dairy operations."

Both boilers at Sanida Dairy (100 h.p. and 150 h.p.) are fired by Iron Fireman GCR vertical-type Gas Burners. Zone fire control permits low-fire steady-state operation and modulated firing. Automatic damper controls enable rapid heat response.

Iron Fireman

Gas Firing for heating, power, or processing

Iron Fireman gas firing is saving users many fuel dollars. "Control" is the answer—control of the fuel-air ratio for the most efficient combustion; control of the firing rate to instantly adjust to the load; and control to compensate for varying pressures in the gas supply. No other gas firing gives such outstanding

performance and savings. They are available in three styles—inshot burners, vertical-type burners, and ring-type burners, for boilers up to 1,000 horsepower. Find out how much an Iron Fireman can save for YOU. Phone your nearest dealer or send the coupon below for descriptive literature.

MAIL COUPON FOR FULL INFORMATION

IRON FIREMAN MFG. CO., 3250 W. 106th Street, Cleveland 11, Ohio

Please send literature as checked:

- Commercial Gas Burners
- Coal-Flow Stokers
- Rotary Oil Burners
- Pneumatic Spreader Stokers

Name _____
Address _____
City _____ State _____



AUTOMATIC FIRING FOR HOMES, BUILDINGS, INDUSTRIAL PLANTS



Horizontal Rotary Oil Burner

Fires low-cost, heat-rich heavy oils (Nos. 5 and 6) with complete steadiness and dependability. Oil feed rate is constant, even with changes in viscosity of oil.

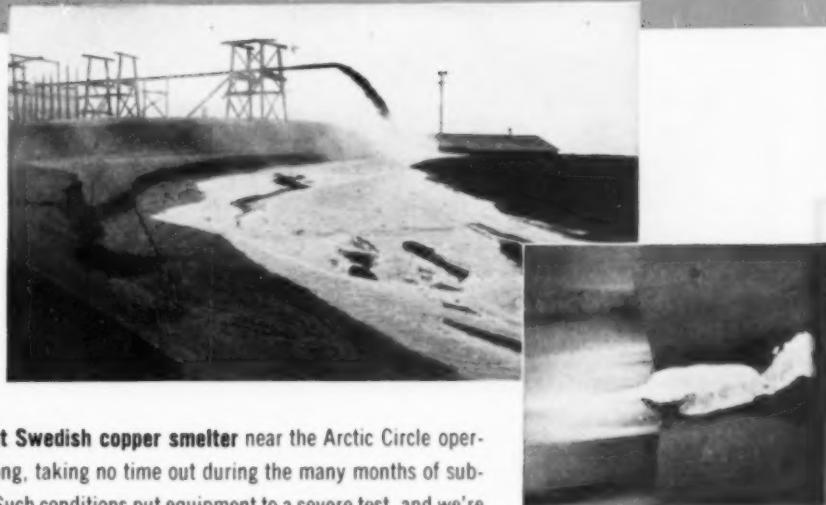


Coal-Flow Stoker

Feeds coal direct from bin. No coal handling. Synchronized coal and air supply automatically adjusted to boiler load at all times. Capacities to 400 boiler h.p. Pneumatic Spreader models also available.

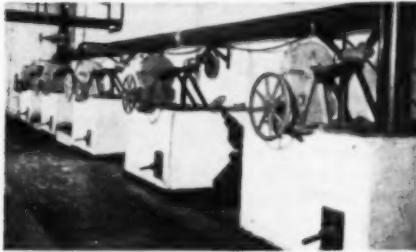
COLD climate ... HOT slag

Slag and water discharging into fill area at Bolidens Gruvaktiebolag, Skelleftehamn, Sweden.



This important Swedish copper smelter near the Arctic Circle operates all year long, taking no time out during the many months of sub-zero weather. Such conditions put equipment to a severe test, and we're proud that the Hydrojet System that takes care of the slag meets the proverbially high standards of Swedish efficiency.

In the operation at Skelleftehamn, two Hydroseal Ash Pumps in series pump a 180°F. mixture of slag and water against a total head of 152 feet. During a normal day approximately 400 tons of granulated slag are delivered to the fill area at a rate of 2000 G.P.M.



Slag granulating chambers.



If you have a refuse handling problem, get the advice of your nearest A-S-H engineer. It's the quickest way to find the right answer.

THE ALLEN-SHERMAN-HOFF CO.
Dept. L — 259 E. Lancaster Ave., Wynnewood, Pa.
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HYDROJET

(hydraulic)

materials handling systems

HYDROVAC

(pneumatic)

Fast Motor Service Wherever You Are



Factory approved motor service in every
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Allis-Chalmers Certified Service Shops.

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Montgomery—Standard Electric

ARIZONA

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Denver—Baker Electric Company

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Hartford—Charles H. Leppert
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Paterson—Elec. Service Repair Co.
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New York—Consol. Elec. Motor Co.

Rochester—Vanderline Elec. Corp.

Utica—Mather, Evans & Diehl Co.

Watertown—Watertown Elec., Inc.

NORTH CAROLINA

Charlotte—Southern Elec. Service Co.

Greensboro—Southern Elec. Serv. Co.

Rocky Mount—Hammond Elec. Co.

OHIO

Cincinnati—Cincinnati Elec. Equip.

Electric Service Co.

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Toledo—Romonoff Elec. Motor Serv.

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Oklahoma City—Southwest Elec. Co.

Tulsa—Smith-Milligan Electric Co.

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Philadelphia—Elec. App. & Repair Co.

Pittsburgh—Penn. Elec. Coil Corp.

Yard—Industrial Electric Company

SOUTH CAROLINA

Greenville—Southern Elec. Serv. Co.

Spartanburg—Southern Elec. Serv. Co.

SOUTH DAKOTA

Sioux Falls—Electric Motor Repair

TENNESSEE

Columbia—Middle Tenn. Arm. Wks.

LaFollette—Standard Arm. Works

Memphis—Indus. Elec. & Supply Co.

TEXAS

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Applied . . .

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Certified Service Shops and Sales Offices
Throughout the country.



CONTROL — Manual,
magnetic and combination
starters; push button
stations and components
for complete control
systems.



TEXROPE — Belts in
all sizes and sections,
standard and Vari-Pitch
sheaves, speed
changers.



PUMPS — Integral
types from $\frac{1}{2}$ in.
to 72 in. discharge
and up.

Texrope and Vari-Pitch are Allis-Chalmers trademarks.



A-3864

ALLIS-CHALMERS



**Powell past performance
is your assurance
of future satisfaction**

Unsubstantiated claims that one valve is better than the other are not very convincing. The record of performance and service records of Powell Valves in every branch of industry—especially your own—are conclusive evidence of what you can confidently expect from them in the future.

The Wm. Powell Company
Cincinnati 22, Ohio

**SEE OUR EXHIBIT IN
BOOTH 63**
38th National Exposition
of Power and Mechanical
Engineering, New York City,
December 1 to 6

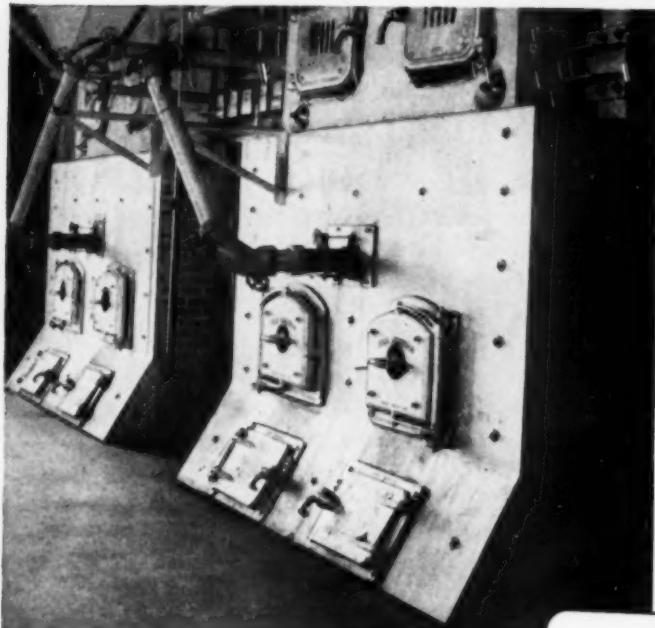
Fig. 11303 W. E.
1500-pound Cast
Steel Pressure Seal
Gate Valve with
welding ends.
One of many
Powell designs for
Power Plants

POWELL

BRONZE IRON, STEEL AND CORROSION RESISTANT VALVES

HOW A SMALL PLANT SAVES BIG MONEY— BY BURNING COAL THE MODERN WAY!

"Modernizing our coal installation cut monthly fuel bills from \$777 to \$650... labor costs from \$120 to only \$40!"



**says Mr. William C. Musch,
Chief Engineer, Allen Memorial
Hospital, Waterloo, Iowa.**

Here's Allen Memorial Hospital's new steam plant. Boilers are fired by pneumatic spreader stokers. The plant now operates with $\frac{1}{3}$ the manpower formerly needed. Compared to the old installation, the new equipment saves 18¢ on every thousand pounds of steam generated. The savings realized by this small plant will pay for the entire installation in $7\frac{1}{2}$ years.

• Whether you plan to modernize your steam plant, or build a new one...whether you burn a lot of fuel, or a little...you can cut a *big* percentage from your operating costs by using up-to-date coal equipment.

A consulting engineer can show you how you can cut labor costs to a minimum with automatic coal-and ash-handling equipment...how you can get more steam for every dollar when you burn coal in a modern installation designed to meet your specific needs.

Of all fuels, only coal has ample reserves for the future. And to produce this coal, America has the world's most efficient coal industry. That means that coal users, unlike those committed to other fuels, get the advantages of dependable supply and relatively more stable prices—now and for the future!

If you operate a steam plant, you can't afford to ignore these facts!

COAL in most places is today's lowest cost fuel.
COAL resources in America are adequate for all needs—for hundreds of years to come.
COAL production in the U. S. A. is highly mechanized and by far the most efficient in the world.
COAL prices will therefore remain the most stable of all fuels.
COAL is the safest fuel to store and use.
COAL is the fuel that industry counts on more and more—for with modern combustion and handling equipment, the inherent advantages of well-prepared coal net even bigger savings.

BITUMINOUS COAL INSTITUTE

A Department of National Coal Association, Washington, D. C.

FOR HIGH EFFICIENCY FOR LOW COST
YOU CAN COUNT ON COAL!

*Better gear protection
when you need it!**

-GULF E. P. LUBRICANTS

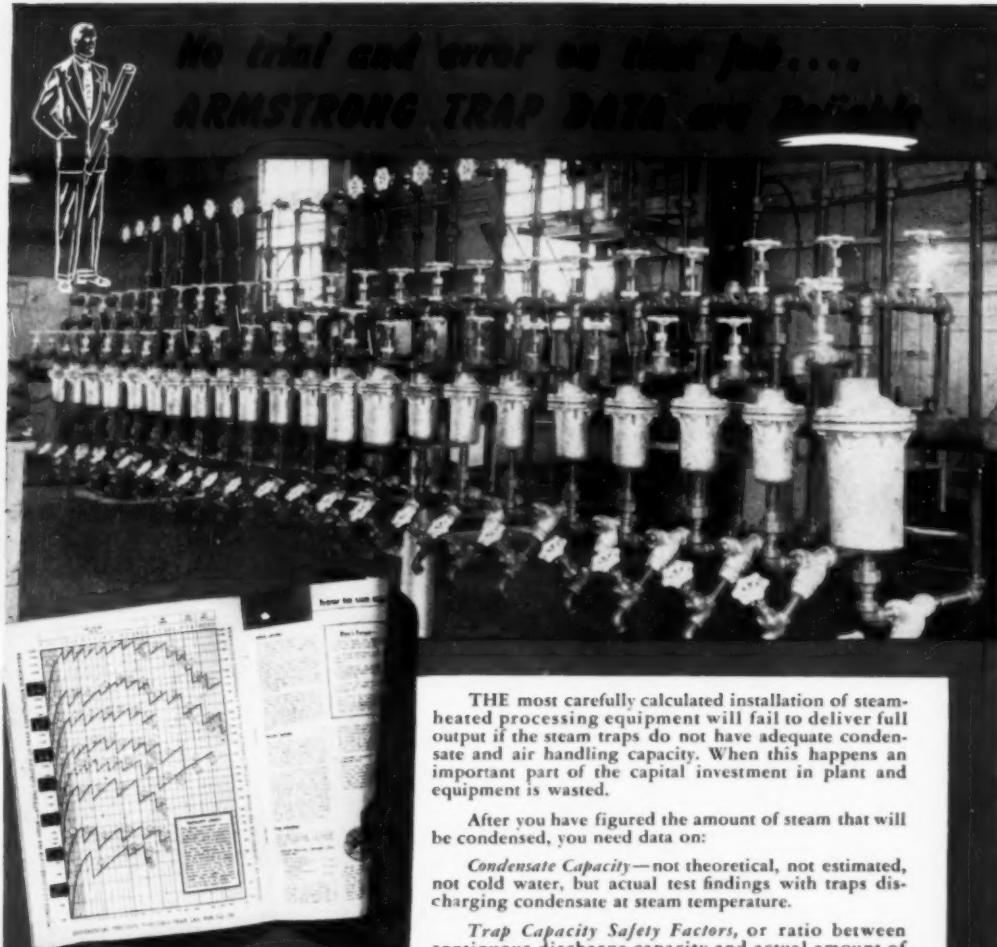


With Gulf E.P. Lubricants you get extra protection against gear troubles when production demands put unusually heavy loads on equipment. They are specially compounded to prevent metal-to-metal contact and help protect against pitting, spalling, and excessive wear.

For specific recommendations for your equipment, call in a Gulf Sales Engineer today. Write, wire, or phone your nearest Gulf office.

Gulf Oil Corporation • Gulf Refining Company
Pittsburgh 30, Pa.





HERE'S AN EXAMPLE of the reliability of Armstrong data. Armstrong trap capacity figures are based on hundreds of tests with condensate at steam temperature. The choking effect of flash steam through the orifice as well as the back pressure created by flash steam were automatically taken into account. Actual hookups were used to allow for the effect of pipe friction.

If the capacity ratings had been based on cold water tests, which produce no flash steam, they would be too high. Orifice test ratings are too high because they ignore the effect of pipe friction. Since true calculations of capacities have never been conservative.

When you use Armstrong Data and specify Armstrong traps you know that you are getting the right trap for the job.

THE most carefully calculated installation of steam-heated processing equipment will fail to deliver full output if the steam traps do not have adequate condensate and air handling capacity. When this happens an important part of the capital investment in plant and equipment is wasted.

After you have figured the amount of steam that will be condensed, you need data on:

Condensate Capacity—not theoretical, not estimated, not cold water, but actual test findings with traps discharging condensate at steam temperature.

Trap Capacity Safety Factors, or ratio between continuous discharge capacity and actual amount of condensate to be handled. These may run from a low of 2 to 1 or as high as 8 to 1. Armstrong data tells you just what safety factor to use to obtain adequate air venting capacity and maximum heat transfer.

Armstrong trap data helps you get traps "big enough" for the job, but not too big; assures you maximum operating efficiency; eliminates corrections after installation. For traps and trapping assistance call your local Armstrong Representative, or write:

ARMSTRONG MACHINE WORKS
806 Maple Street, Three Rivers, Michigan



SEND FOR the new 34-page
Steam Trap Book—including 14 pages of data
on how to size traps for nearly every type of
equipment. Free on request—no obligation.



ARMSTRONG STEAM TRAPS



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Controlled Quality

PIPE FITTINGS

**maximum service
assured
by metallurgical
soundness**

Sound metallurgy . . . the result of unsurpassed facilities and advanced laboratory controls . . . provides the maximum of dependability in Ladish Controlled Quality fittings. Every phase of metal quality . . . composition, structure and physical properties . . . is continuously safeguarded—and certified proof of metallurgical integrity is available to users of Ladish fittings.



TO MARK PROGRESS

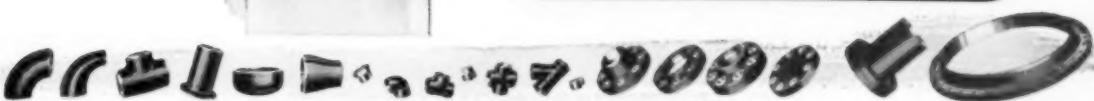
THE COMPLETE *Controlled Quality* FITTINGS LINE
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DRAVO *Counterflo* HEATERS

have a certified High
Standard of Safety!



plus—

ALL STANDARD MODELS, BOTH GAS-FIRED AND OIL-FIRED, LISTED BY UNDERWRITERS' LABORATORIES, INC.

ALL GAS-FIRED STANDARD MODELS APPROVED BY AMERICAN GAS ASSOCIATION.

ACCEPTANCE BY FACTORY MUTUAL ENGINEERING DIVISION OF DRAVO STANDARDIZED SAFETY CONTROL CIRCUIT.



DRAVO HEATER SAFETY MEANS SAVINGS FOR YOU

Because they have this safety approval, you'll find you can obtain the lowest-possible insurance rates with Dravo *Counterflo* Heaters. These savings represent only part of the many savings you get with Dravo warm-air Heaters. For instance:

DRAVO HEATERS OFFER YOU . . .

- low initial cost . . . savings up to 60% on installation
- concentration of heat at working levels
- 150-foot air throw . . . no duct work required
- flexibility . . . units can be mounted in any position on floor, wall or ceiling

- automatic operation . . . on-off or modulating controls
- long service life . . . low maintenance . . . stainless steel combustion chamber eliminates refractory lining
- mobility . . . can be moved easily to any location
- low fuel consumption . . . direct-fired . . . burns gas or oil . . . readily converted

DRAVO HEATERS HAVE MANY USES . . .

These versatile heaters are ideal for commercial and industrial use in foundries . . . warehouses . . . machine shops . . . stores . . . schools . . . churches . . . process industries . . . and many others. Why not look into the possibilities of Dravo Heaters for your heating and ventilating needs? Write today for Bulletin No. QR- 26

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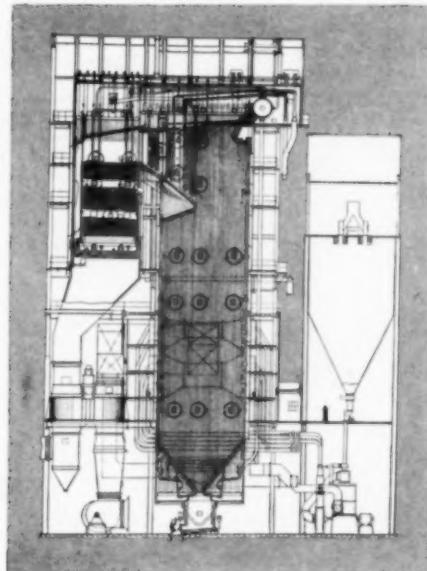
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JOPPA STATION

Electric Energy, Inc. was formed by the following utility companies:

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KENTUCKY UTILITIES COMPANY
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Steam Generators.....4 Radiant-Reheat Type;
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Capacity, each.....1,200,000 lb per hr
Throttle Pressure.....1800 psig
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Soot Blowing.....Vulcan Automatic
Sequential System includes wall blowers, long retracts
for superheater and reheater sections, rotaries for
economizer and air heater-cleaner controls; driven by
air. Blowing medium—air.
Consulting Engineers.....Ebasco Services, Incorporated



Largest soot blower order ever placed for a single central station

At Joppa Station—first station in the world designed for initial capacity of 650,000 kilowatts—boiler cleaning will be by Vulcan. The Vulcan automatic-sequential system represents the largest single central station order ever placed for soot blowers.

Each of the four combustion steam generators ranks with the largest ever built. At full capacity the four may burn as much as 7,500

tons of coal every 24 hours. High boiler availability will be at a premium, for Joppa Station will play a major role in our national defense program.

Vulcan offers effective cleaning, with minimum maintenance—for large boilers or small—utility or industrial—power or process. A letter will bring you facts on how Vulcan can save for you.

COPES-VULCAN DIVISION
CONTINENTAL FOUNDRY & MACHINE COMPANY
ERIE, PENNSYLVANIA

VULCAN *Automatic* **SOOT BLOWERS**



Which **one** counts most?

Of all the 2708 men and women who make up Bell & Zoller Coal Company, *no single individual is most important!* Just as in any other business, coal production takes a lot of people doing a lot of different things to keep the ball rolling. And it takes teamwork too. Serving the folks who buy Bell & Zoller coals is a job in which each miner, driller, loader, clerk, salesman and executive plays a vital part.

Every one of them—and their families, too—have an important stake in how well the job is done.

Ours isn't exactly a huge organization, nor is it a small one, by any means. But man for man and woman for woman, we don't know of one *anywhere* that does a better job of working together to see that every customer gets the utmost of service and satisfaction.



BELL & ZOLLER COAL COMPANY

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Sixty-Five Years of Service to Coal Users

Producers of
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Sharples, West Virginia



Tips on Getting the Best Service from your Fans

MAKING THE RIGHT SELECTION AXIAL FLOW? or CENTRIFUGAL?



BUILDS BOTH TYPES

Axial Flows, on the other hand, move air by the propeller principle, straight through the fan housing. These fans will thus be most efficient mounted in straight runs of duct. They are ideal for light-duty ventilation and air conditioning service at pressures to around 2". Axial flows are higher velocity fans than centrifugals, are lighter weight and more compact than centrifugal fans, therefore lower cost for duct-mounting on ceilings, walls, etc. However, the performance curve is often the last analysis in your choice of fan for each job. "Buffalo" Bulletin 3533-C contains a comparison performance chart of both "Buffalo" Limit-Load Fans and Axial Flows. A copy will be mailed to you on request.

Centrifugal fans like this "Buffalo" Limit-Load model are generally the first choice for large ventilation, exhaust and air conditioning systems. Their efficiency is high even when installation is at a curve in the duct. Medium speed fans, they are ideal for handling large volumes of air quietly at medium pressures. "Buffalo" Limit-Load Fans have the additional advantage of being non-overloading, regardless of the system pressure. For further factors in the selection of a centrifugal fan, write for Bulletin 3737.



BUFFALO[®] FORGE COMPANY

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FIRST FOR FANS

BUFFALO, NEW YORK

PUBLISHERS OF "FAN ENGINEERING" HANDBOOK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont. Sales Representatives in all Principal Cities

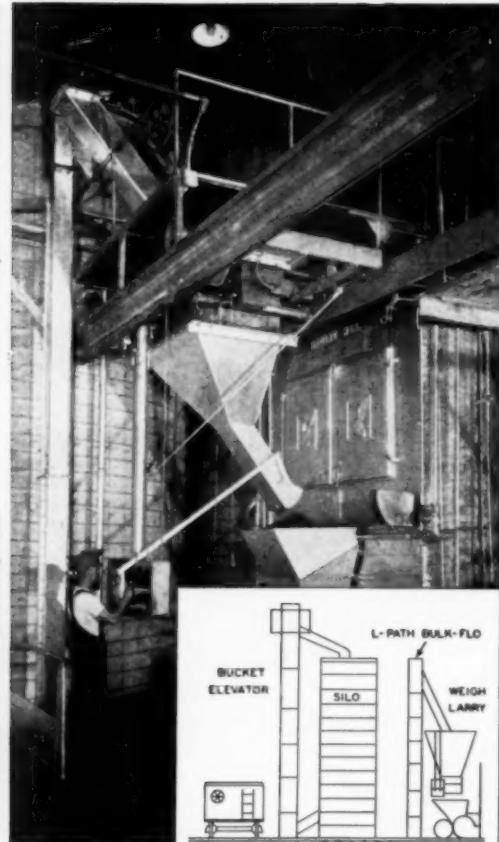
VENTILATING

PRESSURE BLOWING
AIR CLEANING

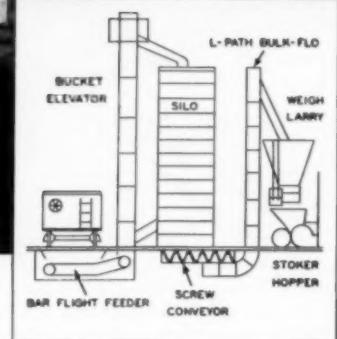
COOLING
AIR TEMPERING

HEATING
INDUCED DRAFT

FORCED DRAFT
EXHAUSTING



This Link-Belt coal handling system in an industrial power plant is a model of compactness and efficiency. Bar flight feeder moves coal from track hopper to bucket elevator feeding two silos (left). Screw conveyors under the silos reclaim to L-type Bulk-Flo Conveyor-Elevator, which delivers to weigh larry (right).



Sure way to cut power plant costs . . . start with efficient coal handling

No two power plants have exactly the same operating requirements or physical limitations. That's why Link-Belt's broad experience in designing and building coal handling systems offers you unique advantages.

Consider, too, the completeness of the Link-Belt line. Our engineers can choose from all types and sizes of equipment for unloading, storing, handling and weighing your coal. And Link-Belt will assume complete responsibility for the entire installation—from planning to erection, if desired.

New Book 2410 shows latest equipment and system layouts for power plants large and small. Ask your nearest Link-Belt office for a copy. You may find some ideas that will help cut your coal handling costs.

LINK-BELT
COAL HANDLING EQUIPMENT

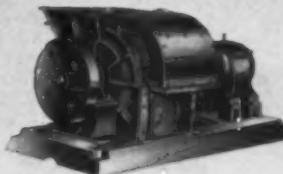
LINK-BELT COMPANY Plants: Chicago, Indianapolis, Philadelphia, Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.

12-301

FOR HIGH TONNAGE CRUSHING . . .

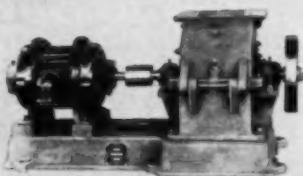


Heavy Duty 30-S. For Primary Crushing. Crushes ROM coal, rock, slate, sulphur balls and gob—high tonnage without oversize. Saves labor costs of pickers.



"5" Series. 9 sizes. Capacities up to 500 TPH. High tonnage with minimum fines. Well suited to power plants.

OR COAL SAMPLING . . .



Laboratory Mill. 2 sizes. Capacities up to 2000 lbs./hr. Very efficient for coal sampling.



"13" Series. Three sizes. Capacity up to 6 TPH. For experimental runs, testing, and pilot plant operations.

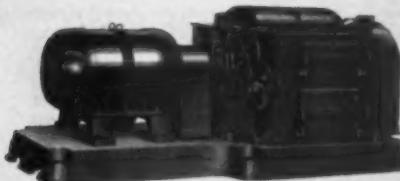
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FOR YOUR OPERATION!



"WC" Series. 4 sizes. Capacities up to 90 TPH. Available with drop cage. Compact, requires minimum headroom.



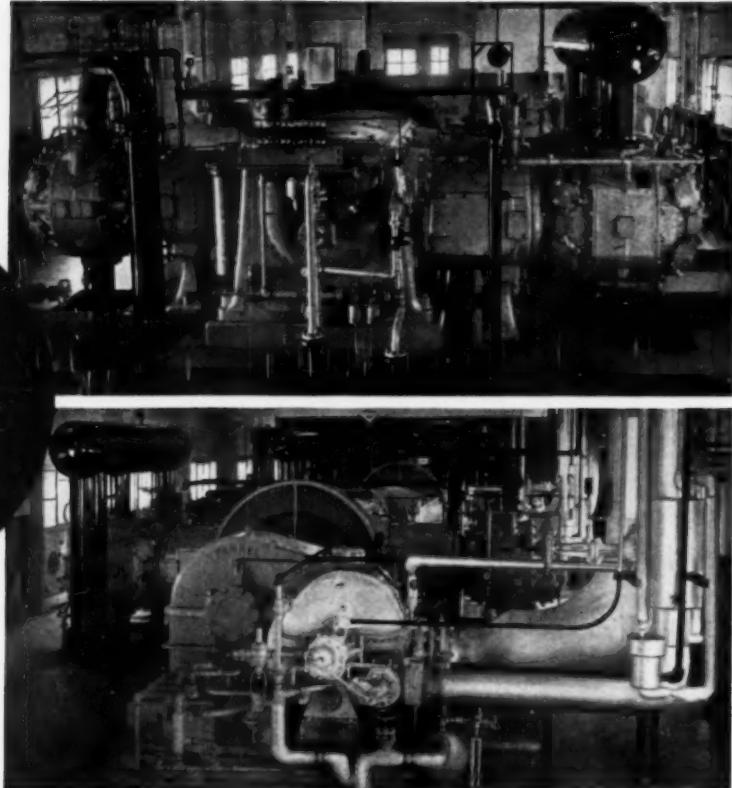
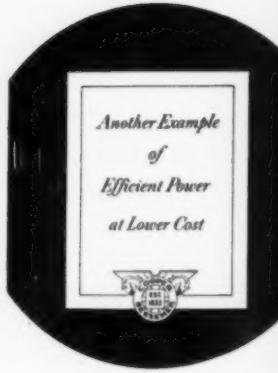
"AC" Series. 17 sizes. Capacities up to 800 TPH. Dual adjustability for easy size control. Drop cage for easy cleanout.

WRITE for details today. Describe your crushing needs.

American **PULVERIZER COMPANY**

Originators and Manufacturers of
Ring Crushers and Pulverizers

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In Processing Service . . .

COOPER-BESSEMER MOTOR OR TURBINE DRIVEN COMPRESSORS

...for continuous operation...for minimum down time

● The units shown above are Cooper-Bessemer M-Line compressors in Continental Oil Company's Billings Refinery. They are turbine driven, with reduction gears, and are handling vapor and recompressor gas through 2 stages, from 17 psi to 253 psi discharge.

During their two years of continuous operation, these units have shown a typical M-Line record—smooth, trouble-free performance, minimum down time and completely satisfactory behavior in general. The reasons are simple. Combined in these units are many of the features that have contributed to the success of Cooper-Bessemer engine-driven hori-

zontals and modern V-Angles—features that come only from years of practical experience and painstaking development work in compressor design and construction.

If you have new jobs coming up requiring either motor or turbine driven compressors get all the facts on modern Cooper-Bessemers. They are available in sizes from 250 to 5,000 horsepower.

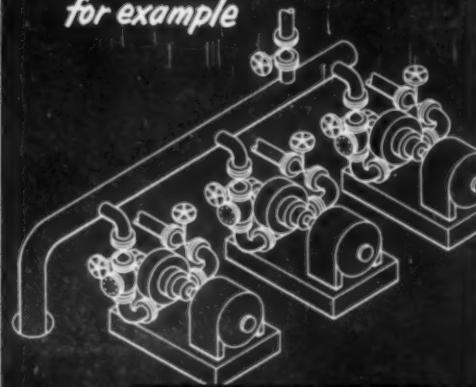
The
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Can You Trust Your Checks to Hold Like This?

...on Water Pumps,
for example



THE INSTALLATION

Crane Iron Body Swing Check Valves in 8-inch vertical lines on discharge side of water pumps supplying a large eastern paper mill.

THE HISTORY

The mill depends on these pumps for all water. Loss of head at the pumps would create a serious problem. The mill could take no such risks. Regularly, the check valves on pumps were replaced, but only to be found leaking between pumping cycles, a few months later.

It's now more than a year since the change-over was made to Crane Check Valves. There's been no loss of water, no maintenance or replacement of any checks on the pumps. That was proof enough for the mill, that Crane Quality means better valves—greater dependability and bigger value. As a result, 3 more of these checks were installed on a separate battery of suction pumps.

VALVE SERVICE RATINGS

SUITABILITY:

Working smoothly—no complaints

FEATURES:

*OK for either horizontal
or upward flow*

MAINTENANCE COST:

*None—no maintenance
needed to date*

SERVICE LIFE:

Now better than other checks used

OPERATING RESULTS:

No water or head loss

PRICE:

In line with other makes

AVAILABILITY:

Stock item—Crane product

THE VALVE

Crane No. 373, 125-Pound Iron Body Swing Check Valves, brass trimmed. The long life and high seating efficiency of these checks, in 2 to 8-in. sizes, is in large part due to the Crane patented flexible disc-hinge design. Double spring mounting eliminates lost motion between parts, yet permits true, full contact of disc and seat at every closure. Also serves to absorb the shock of seating under back-flow pressure. See your Crane Catalog or Crane Representative for full details.



The Complete Crane Line Meets All Valve Needs. That's Why

More Crane Valves Are Used Than Any Other Make!

CRANE VALVES

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VALVES • FITTINGS • PIPE • PLUMBING • HEATING

BIRD-ARCHER'S COMPREHENSIVE 8 POINT WATER TREATMENT SERVICE

Even if your present water treatment methods appear satisfactory, it will pay you to look into Bird-Archer's 8-point water treatment service. Any or all of this comprehensive, efficient service is available to you. Talk to your Bird-Archer representative about it next time he calls. Or, write us now to arrange a consultation. No obligation, of course.

What Bird-Archer Does



1. Surveys Plant—Bird-Archer makes a complete study of plant operation involving the use of water or steam . . . checks present equipment and past performance.



2. Studies All Available Water—Starting at the source, Bird-Archer makes exhaustive analyses of water supplies.



3. Develops Treatment and Control Systems—On the basis of these comprehensive studies, Bird-Archer develops a complete system of treatment and control, including necessary operational changes.



4. Specifies Equipment that May Be Necessary—Bird-Archer determines whether installation of additional equipment will be helpful . . . analyzes benefits to be derived.



5. Furnishes Proper Chemical Treatments When Required—For more than a half century, Bird-Archer has manufactured specifically formulated treatments to solve individual problems.



6. Instructs Plant Staff—Plant personnel is carefully instructed by experienced technicians in the application of treatment and control . . . teaches simple, accurate test procedures.



7. Makes Periodic Check-Ups—To make certain that the recommended system is providing the best possible results, a Bird-Archer Service Engineer makes regular, personal check-ups.



8. Offers a Laboratory Service for Scientific Analysis—Modern Bird-Archer laboratories, staffed by trained chemists, specialize in water analyses and research . . . check accuracy of plant control.

BIRD-ARCHER WATER TREATMENT

THE BIRD-ARCHER COMPANY, 4337 NORTH AMERICAN ST., PHILADELPHIA 40, PA.
NEW YORK • CHICAGO

IN CANADA: The Bird-Archer Co., Limited, Cobourg, Ontario
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Four years maintenance-free service on Propane at 300 pounds pressure—temperatures from 60° F. above to 40° F. below zero . . .

... THAT KIND OF PERFORMANCE
IS AN "OLD STORY" WITH . . .

HOMESTEAD Lever-Seald VALVES

A prominent Mid-Western Oil Refiner* installed a 3", flanged, cast-steel, straightway HOMESTEAD Lever-Seald VALVE on Propane service at 300 lbs. working pressure with a temperature range from 60° F. above to 40° F. below zero. After four years service, with no maintenance except repacking, the valve still held tight.

That sold him—proved to him that HOMESTEAD Lever-Seald VALVES are his "best buy"! Today he is using Lever-Sealds on Propane and on drag lines from stills, another difficult service.

HOMESTEAD Lever-Seald VALVES really lick tough problems, not only in the Processing Industries, but in scores of other industries as well. And wise buyers know that savings effected on difficult services are made in even greater degree on "every day" air, steam, water, gas and oil jobs.

Why don't *you* prove to *your own* satisfaction that HOMESTEAD Lever-Seald VALVES are *your* "best buy," by putting some to work in *your* plant?

*Name on request.



Drag line from still handling oil and tar at 800° F.,
100 lbs. pressure.



Propane at 300 lbs. pressure, minus 40° F.



For complete technical data
and prices, WRITE FOR
"VALVE REFERENCE
BOOK No. 52." No obligation.

HOMESTEAD
VALVE MANUFACTURING CO.

P. O. BOX 70

"Serving Since 1892"

CORAOPOLIS, PA.

CLOSE AT HAND

Independent Water Supply Improves Plant Operation

Having a complete modern fire department right in your own plant is probably the best fire protection you could have but it's not always necessary. It depends on the nature and scope of your operations. Many thousands of progressive manufacturers find that an automatic sprinkler system backed by a Horton elevated water supply provides adequate fire protection. Excelsior Mill No. 4 of the Deering Milliken Mills at Pendleton, South Carolina, is a plant protected in this manner.

If a fire should break out in this vast, modern mill any hour of the day or night, water stored in the 125,000-gallon Horton elevated tank is ready for action. The instant a sprinkler head opens, water flows from the tank by dependable gravity pressure. Protection like this is economical, efficient—the best of business sense. Even if a fire should never occur, automatic fire protection systems pay for themselves by reducing insurance premiums.

Horton ellipsoidal-bottom elevated tanks are built in standard capacities from 15,000 to 500,000 gallons—radial-cone bottoms from 500,000 to 3,000,000 gallons. Write our nearest office for complete details.

125,000-gallon Horton ellipsoidal-bottom elevated tank built to provide gravity water pressure for fire protection at Deering Milliken's Excelsior Mill No. 4 at Pendleton, S. C.



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Tulsa 3.....1628 Huat Blvd.
Washington 6, D. C.....1114 Cafritz Bldg.

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Could You Use
SAVINGS
Like These?

40% less
Fuel Consumption
50% more
Boiler Capacity

**Bailey Meters and Controls
Insure Savings at
Kerr Bleaching & Finishing Works,
Concord, N. C.**

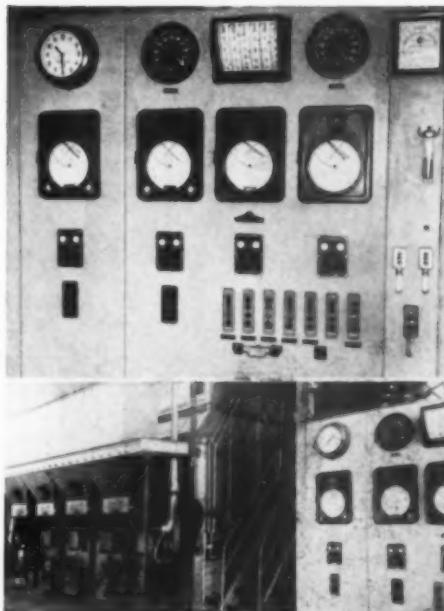
The key to complete returns on any investment in new power equipment is a fully co-ordinated system of meters and controls. It's the old story, the tail that wags the dog—careful attention to this comparatively minor part of the over-all installation cost can mean the difference between profit and loss in operation.

Here's where Kerr Bleaching & Finishing Works has cut operating costs—by installing co-ordinated Bailey Meters and Controls. The installation includes Bailey Meter Combustion Control, and Bailey Two-element Feed Water Control.

Such a co-ordinated system is an important plus for Bailey customers. Nowhere else can you buy such a complete range of equipment, selected without bias to do the best job for you. Nowhere else can you find such expert engineering service, immediately available through conveniently located direct sales and service representation. May we help you?

Call our local branch office or write for Bulletin 15-H.

A-113



Control panel, showing completely co-ordinated Bailey Meters and Controls at Kerr Bleaching and Finishing Works, Concord, N. C.

**BAILEY
METER
COMPANY**

1028 IVANHOE ROAD
CLEVELAND 10, OHIO

Controls for Steam Plants
COMBUSTION - FEED WATER
TEMPERATURE - PRESSURE
LIQUID LEVEL - FEED PUMPS

A Bid from Chapman



You are cordially
invited
to drop in at
BOOTHS 46 and 47
at the Power Show
... and to consult
with sales and
engineering staffs
of The

**CHAPMAN
VALVE**

MANUFACTURING COMPANY
Indian Orchard, Mass.

Timely Comments



Thoughts After Attending A Power Session

Many important subjects, of interest to all types of industry were discussed at the Engineering and Operation Section meeting of *Southeastern Electric Exchange* in Atlanta, Sept. 25-26. Participants were utility company department heads, responsible for delivery of adequate power to the South's fast growing industrial operations.

Several elements are essential in the successful operation of all public utilities:

- 1—Electricity must be produced and delivered within cost and price limits controlled by government.
- 2—Planning and construction programs must be adequate to meet uncertain demands in uncertain locations, and it takes several years to buy and build a large power plant.
- 3—Economy in construction and operation is imperative if utilities are to continue their record of holding rates in line in spite of spiraling labor and material costs.
- 4—Low cost production sites (hydro) are already built, and future demands must be met by steam plants built at high cost and operated at high personnel and fuel expense.

Continued success in their efforts is, therefore, sufficient evidence that utility engineers know how to design skillfully and operate economically.

Design—Utility company construction costs have risen, but not nearly so sharply as average construction costs in general. Bigger units, advanced engineering by manufacturers, elimination of non-essentials, extensive interconnection of power plants, and rigid maintenance programs—all contribute toward getting the most for each dollar invested. Equipment is arranged more compactly, and building facilities are sharply reduced. In fact outdoor construction (no main building at all) is becoming more general in the South as the many objections to this type of plant are overcome

THERE IS NO BETTER PLACE to feel the pulse of Southern industry than at a meeting of electric utility engineers and operators.

by improved equipment design and arrangement.

Combustion experts are following every Btu to be sure that it does its work. Coal per kilowatt-hour has been very greatly reduced. And efficiencies are continuing to rise as quickly as higher steam pressure and temperature are made possible by advances in metallurgy.

Personnel—Training of supervisors and operators was a popular subject among operating heads at the Southeastern Electric Exchange Meeting.

One discussion leader pointed out that modern steam plant operation is sufficiently complicated to justify selection of technical college graduates for all key positions. But at the same time he stated that two of his four plant superintendents had relatively little formal schooling—and these are his best men. So it all comes back to ability, a liking for the work, and willingness to learn.

With that as an introduction someone asked, "Why then do you seek only college graduates for your training program?" After kicking that question around a while, the final answer was not so surprising.

Actually the man in charge does not care where his men come from, just so they are good. But because college education has become so readily available, most young men with engineering ambitions are now technical graduates.

In any event those present agreed that most of their applicants for training course are young engineers, just out of college—but the demand is greater than the supply. Any really capable young man should be able to make rapid advancement in utility plant operation.

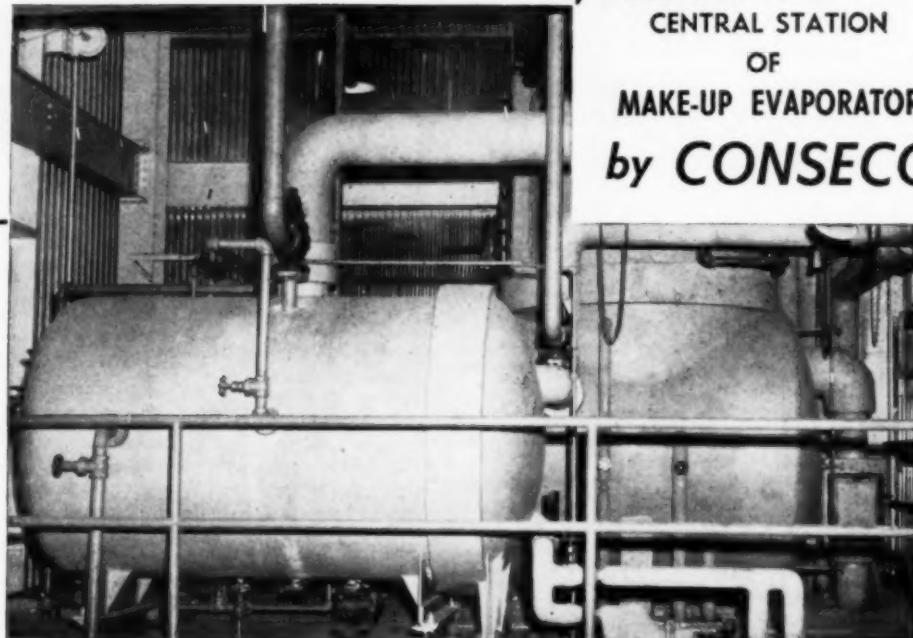
Maintenance—Maintenance in these plants is also a new science. Old style "nut busters" are not good enough. *Maintenance Engineer* is now a common job designation in industry: but sometimes the title outrates the man. The lure of designing, teaching and selling seems to be much stronger than any appeal maintenance work can offer. The answer will not come rapidly but it will be: more pay, more dignity, and more respect for those that keep intricate power machinery producing at maximum efficiency.

"Quickly Repaid its Cost—"

reports SOUTHWEST
CENTRAL STATION

OF
MAKE-UP EVAPORATOR

by CONSECO



This Conseco Make-Up Evaporator is installed in a large central station in the Southwest. It is a horizontal internal tube nest type unit having a 54 in. diameter shell 154 in. long.

Its output capacity is 4,000 lb. vapor per hour at a purity of better than 4 ppm in the condensed vapor. The unit delivers vapor at 22 psia, using extraction steam at 62 psia. To facilitate bundle removal, the bundle is externally supported on heavy duty trucks

and internally on slide rails.

The simplicity and cleanliness of Conseco evaporator design is another typical example of Conseco's many contributions to modern design and construction in power plant equipment. It will pay you to consult Conseco engineers on your requirements.

Write for helpful bulletins on Ejectors, Condensers, Evaporators, Boilers and Pumps.

SEE US BOOTH 76—NATIONAL POWER SHOW—NEW YORK CITY—DECEMBER 1 TO 6

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Industry Speaks

SOUTHERN POWER
AND INDUSTRY

THE NEWER SOUTH . . . maturity of viewpoint

Adapted from comments by Hartlie Branch, Jr., President, Georgia Power Company, before the September 25th meeting of the Engineering and Operating Section, Southeastern Electric Exchange, Atlanta, Georgia.

THE NEW INDUSTRIAL GROWTH of the South has brought to our section a large immigration of citizens from other areas—investors, factory managers, branch office managers, superintendents and technicians. They have come here because their special skills are needed and there is wide opportunity for their creative efforts.

Representing different cultural backgrounds, they have brought us new vision as well as new vigor. As these people take their places of leadership in our communities and as their attitudes and ideas affect us, we are beginning to lose our sectional viewpoint and are beginning to acquire a national outlook. "I hope we will always be proud of our Southern traditions and seek to protect and preserve the ideals and institutions which our section gave to the nation. But, I am glad we are beginning to think like Americans instead of like Southerners only."

The South has lagged behind the rest of the country in expenditures for paved roads, public health services, schools, libraries, etc. These conditions are being corrected. The quality and diversity of our technological institutions, particularly, has shown an amazing improvement. We are recognizing the obligation of the state to give its citizens, rich and poor, adequate public services. Educational facilities are at the head of the list.

Capital has begun to accumulate in the South. While it is still true that multi-million-dollar security flotation must be negotiated in the financial centers, our local banks are playing an increasing part in financing home-owned industries. This trend not only has the effect of keeping the ownership and wages of capital here at home but tends to encourage the establishment of new enterprise and lessens our dependence on other sections.

During 1951 alone, multi-million-dollar industries were established in the South at the rate of one each working day, or more than 300 during the

year. The total value of the major plants established in this area in 1951 was in excess of \$3 billion.

The Industrial Conference Board reports that almost one fourth of the total business expansion in the United States since the end of World War II has occurred in the Southern region.

More impressive still is the current rate of industrial growth. A recent study shows that new industry is being established in the South at a rate of about 45 per cent above the national average, and our gain in per capita income is running 50 per cent higher than the national average.

For years we had no opportunity to acquire industrial skills because we had few industries in which to work and learn these skills. Defense plants established during World War II gave a tremendous impetus to the development of a skilled labor force in the South. The growth of industrial skills no less than the growth of professional training is a sign of economic and social maturity.

Political Independence

We have now acquired greater political maturity. A few years ago, we were the Solid South. Nobody saw any prospect of change and few wanted to do anything about it. As a result, we were taken for granted by both political parties. Then there began to grow up a feeling among us that the South would be better off under a two-party system and some of the bolder newspapers and other public leaders expressed recommendations to that effect. This year, there are growing evidences of political independence in our region. The South is definitely coming of age politically, and the politicians are beginning to sense this change. For the first time, they are paying our section some attention and treating us as citizens of individual and independent views.

Don't Be Complacent

Despite the progress, don't minimize the hard road ahead. We still have the lowest per capita income in the nation. We still spend the least per capita on public education. We have no reason to be complacent. The South is a land of opportunity and people from the older, more crowded, more highly developed sections are taking advantage of this opportunity. New problems will arise as we go forward, but we will meet these problems with the vigor and spirit of a "Newer South."



9
Portion of the giant steam power plant (foreground) and new potlines under construction. Each of the fifteen Foster Wheeler steam generators at the Chalmette plant generates maximum continuous capacity of 225,000 lb/hr at 900 psig and 905 F.

473,200 kw Capacity at Kaiser

THE FIRST UNIT of one of the largest steam power plants in the world, operated by a private industry for its own use, has been completed by Kaiser Aluminum & Chemical Corporation, Chalmette, Louisiana.

Power from this new 370,000 kw steam plant at Kaiser Aluminum's reduction plant near New Orleans began flowing into the first of six new potlines it will serve to produce primary aluminum. The steam plant was designed and is being constructed by Kaiser Engineers.

The steam plant will have a bank of 14 turbo generators, each fur-

Two Power Plants

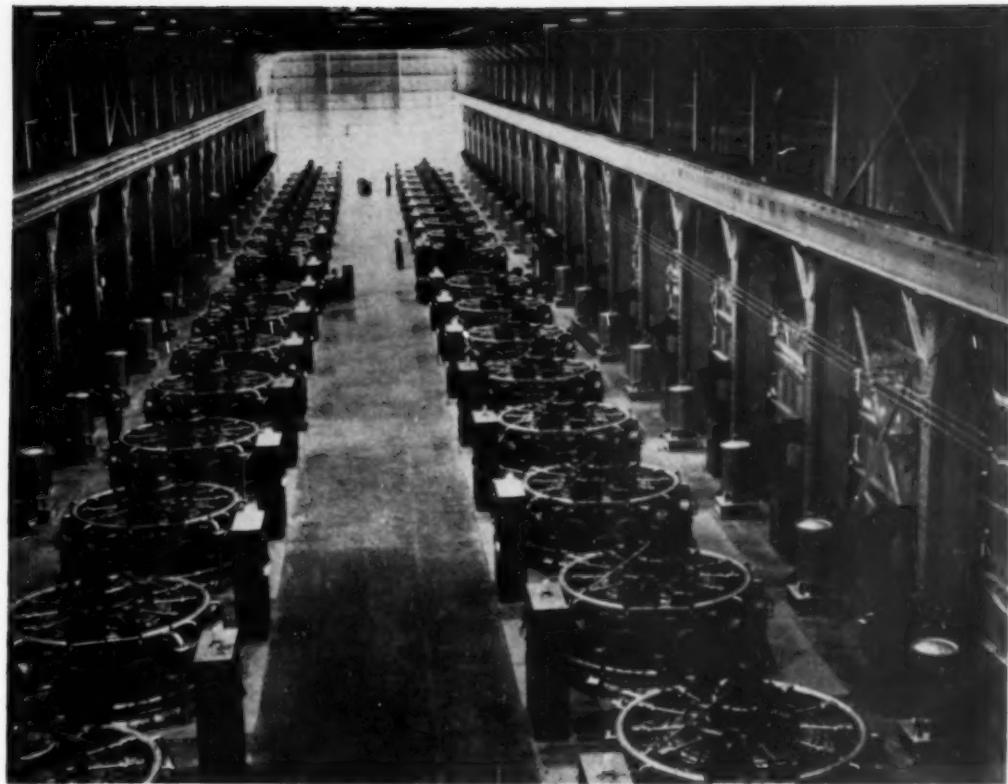
► 80 radial gas engines (103,200 kw) feed 2 potlines.

► 225,000 lb/hr outdoor-type boilers furnish steam to 16 turbo-generators (370,000 kw) feeding 6 potlines and other plant services.

nishing more than 25,000 kw, and two at 10,000 kw when completed. These hydrogen-cooled generating units will be furnished steam from 15 outdoor-type steam boilers, each

producing 225,000 lb/hr 900 psi at 905 F. The turbo generators will be housed in a 750 ft building with a large electrical bay attached.

The fifteen F.W. boilers will



Interior of one of the powerhouses at Kaiser's Louisiana plant. Here are 40 of the 80 Nordberg gas-burning radial engines rated 1820 hp at 400 rpm and driving 1290 kw General Electric d-c generators.

Kaiser Aluminum and Chemical Corporation's Chalmette, Louisiana, operation to be largest primary aluminum producer in country.

be fired by more than 100,000,000 cu ft of natural gas per day delivered by the United Gas Pipe Line Company through a 16-in. pipeline to a plant station which meters the gas and reduces the pressure to plant requirements. While the primary fuel to be used at Chalmette will be natural gas, provision has been made for an oil supply system.

The steam plant's alternating current must be converted to direct current—the type of electrical energy required by an aluminum reduction potline. A long bank of rectifiers, located in an 1,250 ft building between the steam plant and the

potlines, receives the alternating current at 13,800 volts and delivers it to the reduction process at 700 volts d-c. This current is transmitted from the rectifiers by aluminum busses, each consisting of 16 one-inch by 12-inch aluminum bars. When all eight potlines are completed at the plant, 12,000,000 lb of aluminum will have been used for 660,000 ft of bus. Twelve miles of welding bead will be required to fabricate this bus.

In constructing the steam plant and rectifier station, 27,000 cu yd of earth were moved. Because of the plant site's proximity to the Miss-

issippi River, soil conditions made it necessary to support these structures on approximately 200,000 linear feet of piles. Construction of the foundations was complicated by an extremely high water table, and constant pumping and drainage was required. A total of 17,500 cu yd of concrete and 2,000 tons of structural steel will be needed for the steam plant and rectifier buildings.

In addition to furnishing power for aluminum reduction, the steam plant will have ample capacity to supply all other power needs of the

(Continued on page 56)



Test No. 2. Fire at end of preburn period. Note fog pattern as tip is moved over tank.



Test No. 2. Fire in tank is extinguished, but oil spray is still feeding into ground fire.

Control of Oil Fires by Water Fog

Proven Effective by Tests Conducted in Alabama

By A. MERGENTHALER

Principal Electrical Design Engineer
Southern Services, Inc., Birmingham, Alabama

AT the present time, water fog is considered the best means to combat a serious fire in an oil filled transformer. However, recent installations of the large number of Fogheads properly arranged to cover a power transformer effectively have been so costly that utility companies were confronted with the problem of higher insurance cost versus a higher protective cost. In order to make protection more attractive from the investment standpoint, it became evident that a simpler system needed to be developed, without thereby sacrificing overall effectiveness of protection.

During the war, the Bureau of Ships of the U. S. Navy developed large capacity Fog Tips which proved most effective in handling fires of flammable liquids. These Tips have since been made available to private industry and municipalities by several reputable

manufacturers of fire fighting equipment. Until now, their use has been confined to several progressive fire departments on their monitors, water towers, etc., and to chemical industries where large quantities of flammable liquids are stored or processed. The results in these fields have been most gratifying.

With the assistance of the Associated Engineers in Birmingham, I investigated to determine if these Fog Tips could be successfully applied for the protection of power transformers. When the managements of three utilities, affiliated with the Southern Company, approved full fire protective installations at some of their large generating stations, a test to determine the effectiveness of these Fog Tips became of immediate importance. Consequently a test was conducted on the grounds of the North Birmingham Warehouse of the Ala-



Fog Tips, 250 gpm.

bama Power Company, on July 16, 1952.

The Fog Nozzle International assisted us in the test by contributing three of their large Fog Tips. The Birmingham Fire Department, directed by its chief, Mr. Hoyt M. Ayers, furnished the necessary equipment and personnel. Shop employees of the Alabama Power Company prepared the test set-up.



Test No. 2. The oil spray is turned off and ground fire is being extinguished by fog hand lines.



Test No. 4. Fire at end of preburn period. The ladder truck with Fog Tips on top is still in place.

Fire protection must be worth its cost—the same as any other expenditure. Capital expense, effectiveness of control, and insurance—all are important design elements.

Tests Conducted

An old transformer tank, 10 ft high and 7 ft in diameter, was filled with water to within 4 ft of the rim and a 2 ft layer of oil insulating oil was pumped on top of the water. A perforated 1 in. pipe was placed across the top of the tank and arranged so as to permit oil to flow into and around the tank. A 14 in. high earth dike, approximately 14 ft in diameter, was used to confine the oil spill.

The Fog Tips, used in the test, had a capacity of 250 gpm each at 100 psi nozzle pressure. They were mounted, one at a time, on a 65 ft ladder truck. The friction loss in the 2½ in. hose lines from the pumper and in the 3 in. ladder hose, plus the static head, required a maintained pressure of 130 psi at the pumper to give a pressure of 100 psi at the Fog Tip. After the first test, this pressure was raised to 140 psi to compensate for the pressure drop when hand lines were used.

It was not practical to conduct preliminary tests prior to the public showing. This made it necessary to keep the first two test fires to

within reasonable limits so as to convince everyone concerned that full control of oil fires with water fog is not only practical but also effective and very rapid. Another determining factor was the presence of water under the 2 ft top layer of oil in the transformer tank. The temperature of this water had to be kept below the boiling point to avoid steam explosions during the test.

The wind velocity during the test varied from 15 mph to 25 mph. It was interesting to note that in spite of priming with oil, gasoline and excelsior, it was not possible to sustain the fire, within the dike, on the windward side of the transformer tank due to the wind velocity. On the leeward side, we obtained a full blaze which, during test #4, extended to a distance of 40 ft from the tank due to ground soaking from oil spray on the three previous tests.

TEST #1—Fire in Tank Only

After a pre-burn of 4 minutes and 30 seconds, the overhead nozzle completely controlled the fire within 5 seconds. A small lingering flame along the side of the tank

and away from the general direction of the overhead Fog Tip was extinguished by a 1½ in. Fog hand line. We are convinced that this lingering flame would have been extinguished within 2 to 3 seconds by the overhead Fog Tip if poor visibility had not caused the overhead water supply to be turned off prematurely.

TEST #2—Fire in Tank, in Dike Area and Oil Spray Along Outside of Tank

After a pre-burn of 1 minute and 15 seconds, the fire was controlled within 35 seconds. Total extinguishment, particularly below the transformer and on the leeward side of the tank, was accomplished by the use of the two Fog hand lines for an additional period of 30 seconds, giving a total elapsed time of 1 minute and 5 seconds.

TEST #3—Similar to Test #2 Except With Large Quantities of Oil Soaked Excelsior in Dike Area

After a pre-burn of 1 minute and 30 seconds, the fire was controlled by a narrow pattern, overhead Fog Tip within 40 seconds. Complete extinguishment was accomplished by using two hand lines for an additional 19 seconds. Total elapsed time, 59 seconds.

TEST #4 — Overflowing Tank, With Large Quantities of Excelsior in Dike Area and Oil Spill Outside of Dike Area

Pre-burn of 11 minutes and 20 seconds for tank and 8 minutes and

20 seconds for entire area. Oil was pumped into the tank during the entire test period. Control of fire, which was made more violent by steam explosions within the tank, was accomplished within 1 minute and 15 seconds, which time included extending and lowering the ladder pipe so as to obtain optimum coverage. Complete extinguishment required the use of two Fog hand lines for an additional 30 seconds. Total elapsed time, 1 minute and 45 seconds.

Conclusions

The operation of large overhead Fog Tips will control fires on the top and the sides of a transformer. Extinguishment of this portion of the fire appears to be merely a matter of seconds. On the other hand, fire below the transformer tank, which is inaccessible to the fog from the overhead tips, will continue to burn even though at lesser intensity. Hand lines with fog would easily put out lingering fires of this sort. A few small stationary Fogheads placed below the transformer would accomplish this also. Nevertheless, hand lines are defi-

nitely required, since variations in the wind direction, as well as the need for taking care of possible oil run-off, require mopping up by hand.

It is, of course, possible to effectively cover all of the transformer and the surrounding area with a large number of Fogheads. However, water requirements will go up since a layout of this type pre-supposes that some of the nozzles will be ineffective. Increased water requirements in turn affect the fire pump and piping capacity and, the cost of such a fixed Foghead system would be very high. Furthermore, we are convinced that the application of hand lines would still be required. A number of large transformer fires in the past involved tank explosions which expelled burning oil to a considerable distance from the transformer.

The test was well worth the effort and expense. It was most instructive and definitely proved that water fog is an effective medium to extinguish a serious oil fire. It is also the most economical means to combat such a fire.

The greatest advantage of fog

lies in the rapid lowering of the temperature in the fire area, which permits the fire fighter to approach the affected area within seconds after the application of the fog. This is due to the rapid evaporation of the finely divided water. Water damage is minimized.

Only one 250 gpm overhead Fog Tip was used in each test. The observations made during these tests resulted in our decision to use five or six 100 gpm Fog Tips to protect the average three phase power transformer.

The most important observation made during the test was the effect of the position of the Fog Tip in relation to the equipment to be protected. In order to assure maximum effectiveness, a proper balance has to be achieved between the projectional characteristics and the particle size of the fog. This balance will determine the optimum distance at which Fog Tips should be placed from the equipment.

A self-contained fire protective installation with the necessary high pressure pumps, etc., can, of course, only be justified for a generating station or an extremely large attended substation. However, since the quantities of water required for fighting an oil fire with fog are relatively very small, the average transmission substation, which is within reach of a fire department, can also be protected economically. This can be accomplished by placing one or more old transformer tanks in the substation yard. These can be filled with water from a small well. Several 100 gpm Fog Tips can be mounted over the transformers with their pipe header connection at least 40 ft away. The pumper of the local fire department can then be connected between the tanks and the pipe header to the Fog Tips.

It would be advisable to have two 1½ in. Fog Nozzles at the substation for use by the local fire department in fighting oil run-off fires with hand lines.

A description of a complete fire protection layout in a modern steam generating station, giving reasons for certain decisions made, will appear in a future issue of *Southern Power and Industry*.

473,200 kw Capacity at Kaiser

(Starts on page 52)

Chalmette plant, with the exception of the first two potlines now being operated with d-c power from 80 radial gas engines supplying 103,200 kw.

For example, considerable electric power is needed to drive eight motors in the water pumping station. These motors develop 5,800 hp and drive the huge pumps which lift some 500,000,000 gallons of water from the Mississippi River each day, sufficient water to supply a city of more than 1,000,000 persons. Most of this water is used for cooling the condensers that receive steam after it has passed through the generator turbines. The water is delivered to the steam plant through 66-in. steel pipelines. Similar piping returns the water to the river.

The steam and radial gas engine plants at Kaiser Aluminum's Chalmette facilities, which will be the nation's largest primary aluminum

plant, have a combined power capacity of 473,200 kw, a volume sufficient to supply the total electrical needs of a city twice the size of New Orleans.

In planning and building the New Orleans aluminum plant, Kaiser Engineers have successfully solved major problems of widely varied types—from coping with the drainage and foundation problem rising from a water table only a few inches under the ground, to designing two different types of power plants of major size, raw material handling and processing facilities, metal handling equipment as well as the huge reduction potlines themselves.

A complete semi-technical description of the gas engine power plant at Kaiser Aluminum & Chemical Corporation's Louisiana plant was featured on pages 50-55 of the March '52 issue of *SP&I*. Data included principal equipment and auxiliaries. The steam power plant description is scheduled for early publication.

A Notable Series of Articles

Starting in the Next Issue

THIS NATION faces its most critical period in the years immediately ahead. To quote the American Economic Foundation: "The freedom of the American citizen has never been in graver danger than it is today; we are threatened by the Big Enemy from without and by Big Government from within."

These threats to our freedom will remain, regardless of what political party is in control in Washington. For there will be the continuing necessity for heavy military spending and burdensome taxes, along with pressure for new or renewed government controls over prices, wages, rents, materials, interest rates. And when the defense program tapers off, there will be insistent demands that government "take up the slack" with public works expenditures, larger farm subsidies, and other new spending programs.

The illusion that prosperity may be maintained by government controls and deficit spending will continue to threaten our personal freedoms.

The pressure to expand government payrolls may be intensified. And since, already, one dollar out of every six paid out in wages and salaries in the United States goes to a government worker, what chance have we to avoid the disastrous experience of England, Australia and New Zealand in traveling on down the road to a completely socialistic state?

We have one chance. That is through a better general understanding of the basic principles of economics—such things, for instance, as the fact that a higher standard of living can result only from increased production, not from increased money supply.

So it becomes our responsibility—yours and ours alike—to help spread a better understanding of fundamental economic facts among our associates, our employees, and among all those with whom we come in contact. That's why we're starting, in our next issue, what we feel will be the most important series of articles ever published in any business or industrial magazine. It will be a series of articles on the economic "facts of life" by Americans of such prominence that each one will be recognized as perhaps the outstanding national authority on the subject he will discuss.

These articles are being written especially for the W. R. C. Smith publications. They will start with our December issue and will continue through all or the greater part of the coming year. Some of the authors:

Harry F. Byrd, United States Senator

Laurence F. Lee, President, Chamber of Commerce of the United States

C. H. Greenewalt, President, E. I. du Pont de Nemours & Company

A. L. M. Wiggins, Chairman of the Atlantic Coast Line Railroad

John W. Hanes, Chairman of the Tax Foundation

George A. Smathers, United States Senator

Frank Wilkes, President, Southwestern Gas & Electric Company

E. V. Rickenbacker, President, Eastern Air Lines

Others of equal prominence will be added as the schedule for this notable series is completed.

It is expected that reprints of each article will be made available, at cost, for any who may wish to help distribute these vitally important messages.

Authors of the First Three Articles in This Series



LAURENCE F. LEE



SENATOR HARRY F. BYRD



JOHN W. HANES

New Plant Produces Superphosphate

RICHMOND GUANO COMPANY is now operating a new superphosphate plant in which three workmen are able to produce 160 tons of this fertilizer in nine hours, and this includes the unloading of raw materials from rail cars. As a well designed and constructed chemical plant, it is a good example of the savings which can be had through the use of modern materials handling and storage facilities.

Commercial fertilizer is made up of three primary ingredients: nitrogen, phosphate, and potash bearing materials. To these are added minor amounts of calcium, sulfur, and salts of several metals. At Richmond Guano Company, the nitrogen bearing materials and the processed potash are purchased from outside sources, but the superphosphate is produced in the plant by treating ground phosphate rock with sulphuric acid. Then, in the Dry Mixing Building, the three basic materials and the minor elements are mixed, cured, bagged, stored, and shipped.

Superphosphate Building

The superphosphate is produced in a new steel and corrugated asbestos cement building covering a process area 50 by 60 ft, and a storage area 100 ft wide and 140 ft long. The type of construction used is practical, economical, and durable. The building is an adaptation of one of Luria Engineering Corporation's standard designs, plus a monitor top which houses a conveyor system. A steel framework supports the building, the only vertical columns being located 20 ft in from one side, giving 80 ft of completely clear space and 20 ft runway across the 100 ft width of the storage area. The steelwork is covered with corrugated asbestos cement siding (Transite), the siding being fastened to the steel with Nelson Studs.

Modern materials handling and storage methods employed by Richmond, Virginia, manufacturer. Standard building, with monitor top for conveyor system, simplified construction.

In placing these fasteners, a hole is drilled through the transite siding at each point at which it is to be fastened to the steel frame. A headless Nelson Stud is put through each hole and brought in contact with the steel. Then, a special gun welds the stud to the steel; then a nut is turned onto the threaded stud to hold the siding firmly in place. The design of the steelwork and the type of siding used is clearly shown in the photograph of the interior of the storage area.

Superphosphate Production

Richmond Guano Company purchases ground phosphate rock in bulk, and it is delivered in closed, hopper-bottom railroad cars. This rock, ground so that 90 per cent

PROJECT BRIEF

Buildings—Designed and furnished by the Luria Engineering Corporation, New York, N. Y. They are steel, rigid frame type, clear span, roofed and sided with 4.2 corrugated transite.

Sulphuric Acid Storage—Received in railroad tank cars and pumped by compressed air through a Chiksan Joint Assembly into pipe line leading to 300,000 gal steel storage tank designed and erected by the Richmond Engineering Works, Richmond, Virginia.

Dust Storage—30 ft id x 80 ft high, light weight asbestos, six-cell, pre-cast stave silo, designed by the Marietta Concrete Corp., Marietta, Ohio, holds about 1500 tons of phosphate rock dust. Phosphate rock dust, received in drop bottom cars, is fed to silo by subterranean conveyor belt and bucket elevator designed by Barber-Green Co., Chicago, Illinois.

Dust Handling—Dry phosphate rock brought from silo into processing area by a F-H Airslide conveyor, designed by the Fuller Company, Catasauqua, Penna., and furnished by the Sturtevant Mill Company, Boston, Mass.

Manufacturing—Batch process features the Sturtevant Mill Company's mechanical den and excavator.

Design and Construction—Supervised by L. Dudley George, Chief Engineer of Richmond Guano Co., Slaughter, Saville and Blackburn of Richmond, Virginia, were engineering co-ordinators with W. Andrew Green as Resident Engineer.

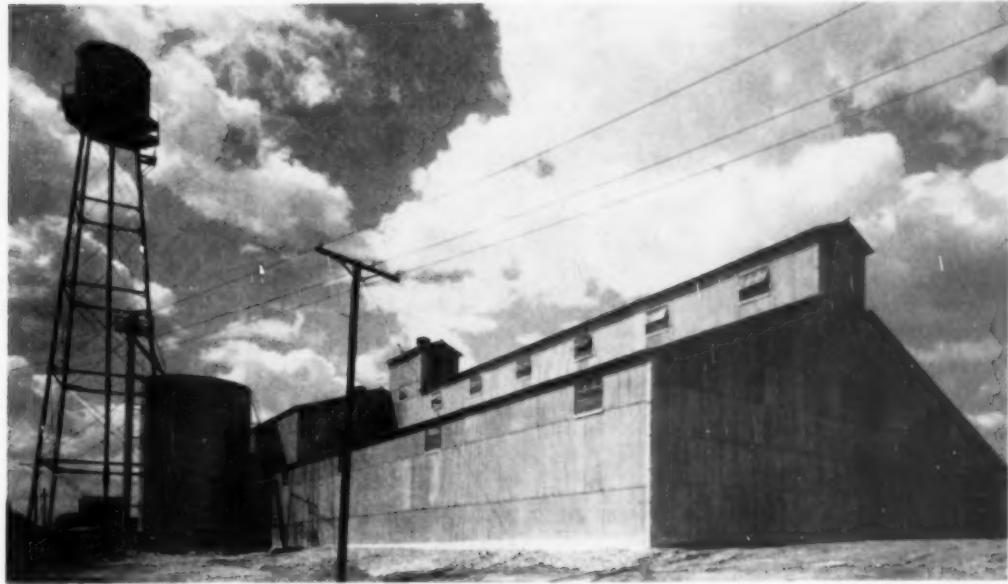
passes through a 100 mesh screen, is dumped from these cars into a covered, underground hopper, from which it is transported on an underground belt conveyor to a bucket elevator which lifts it to the top of a 1500 ton storage silo.

Sulphuric acid, the other ingredient required for production of superphosphate, is received in tank cars and delivered through a Chiksan Joint Assembly to piping leading to a 300,000 gal storage tank. Discharge is accomplished by applying air pressure to the acid in the tank car.

This acid storage tank is constructed of steel plate, the shell being $\frac{3}{8}$ in. thick at the bottom and $\frac{1}{2}$ in. at the top. Since this is concentrated, 66 deg acid (about 95 per cent), it is only mildly corrosive, and no lining is needed in the steel tank.

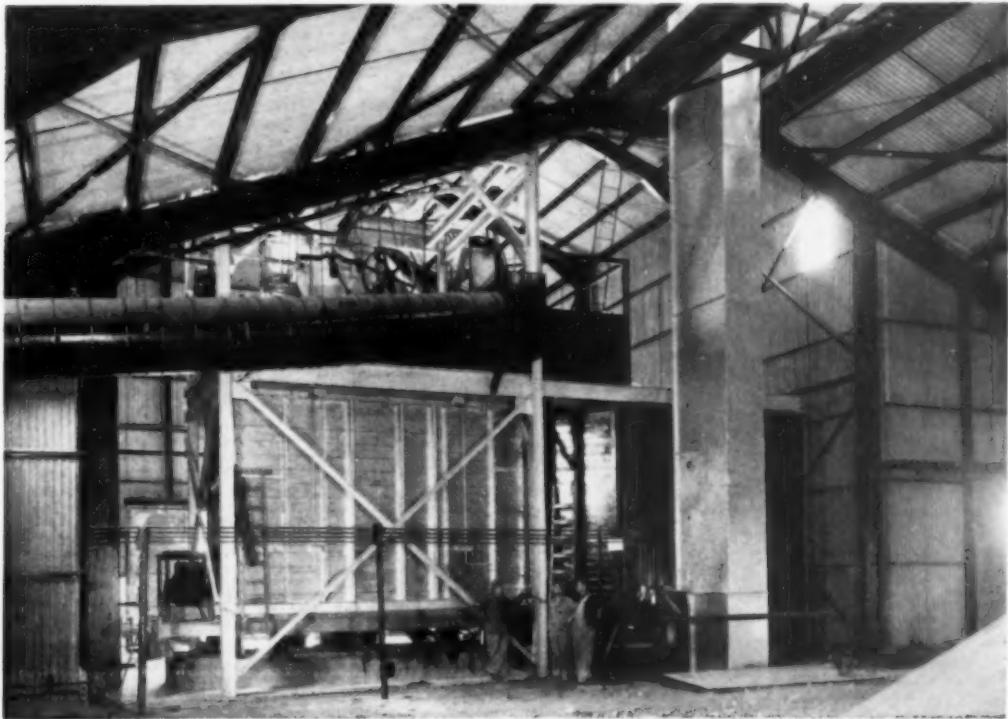
Handling Phosphate

The dry phosphate rock in the storage silo is brought into the processing area of the plant in a Fuller F-H Airslide. This conveyor, designed to move dry, powdery materials, consists of a trough, which looks like a covered, rectangular cross-section gutter, with the top and bottom sections separated throughout its length by heavy cotton duck. The lower half of the trough is supplied with air at 3 psi, and this air continuously flows upward through the duck into the upper section. The upper metal cover is omitted from the portion of the trough that extends inside the silo, so the air from the lower half blows up through the duck into the silo,



Close-up of the new superphosphate plant. The large silo stores ground phosphate rock. Small tanks in front of it are scrubbers for fluorine gas given off when sulfuric acid mixes with phosphate rock.

Below—Batch process features the Sturtevant Mill Company's mechanical den and excavator. Den is mounted on wheels and its sides and front are removable so that the cake of superphosphate can be moved along the track to the right and knocked by rotating blades into hopper beside track.





Steel tank at the right is used to store sulphuric acid. Covered conveyor at the left delivers cured superphosphate to the dry mixing plant.

itself, keeping the powdered phosphate rock above it in an air suspension.

The F-H Airslide is built so that it has a slope of about one foot in five, dropping from a height of three feet where it leaves the silo to the floor level 15 feet inside the plant. The rock dust is held in air suspension in the top half of the trough, and it slides down from the silo to a hopper in the floor of the production area.

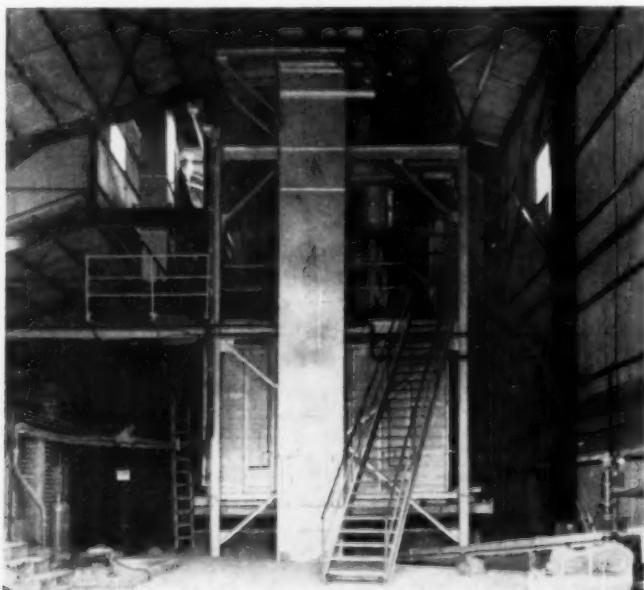
Air is supplied to this slide

from a $7\frac{1}{2}$ hp, Roots-Connersville Blower, which has a capacity of 275 cfm at 3 psi. Automatic controls start the blower when the hopper is low and cut it off when nearly full.

This F-H Airslide has given excellent service, and it seems to do a better job of conveying this dry, powdery material from silo storage than any other method tried.

From the underground hopper the phosphate rock is lifted by bucket conveyor to a small hopper

Inside the production area—at the right is the Fuller F-H Airslide conveyor and its blower. This delivers ground phosphate rock from the silo to an underground hopper in the center. Covered bucket elevator carries phosphate rock to hopper and mixing area at top center. At far left are lead lined storage tanks for dilute acid, which is pumped to mixing area. Below the mixing platform is the large den in which the acid and phosphate rock react to form superphosphate.



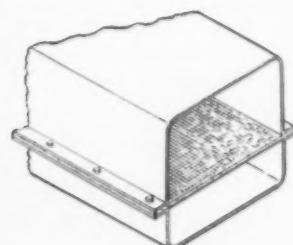
above the mixing pan in which the phosphate and acid come together.

Acid Handling

Meanwhile, the concentrated acid in the storage tank is pumped through a Duriron Pump to lead lined, water cooled reducing vats. Cooling is required because of the heat generated when the acid is diluted. From these tanks the diluted acid is pumped to another lead lined tank above the pan mixer. These tanks are connected by piping laid out to permit continuous recirculation of the liquid. This and all the other piping in the plant and the electrical layout was designed and installed by W. Andrew Green of Slaughter, Saville, and Blackburn, Engineers.

Mixing and Curing

Batches of phosphate rock and acid are dumped into the mixing pan, recording scales being used so that a record is made of the weights in each batch. From the mixing pan, the mixed phosphate and acid are dumped into a standard piece of fertilizer plant equipment known as a "den." This is the Sturtevant 40 ton type of den which is on wheels, the base and back being of concrete while the sides and front are of wood, and hinged so they can be moved away from the base and back.



The F-H Airslide Conveyor

The conveyor, manufactured by the Fuller Company, Catawissa, Penna., is a type used for transporting fine, dry materials, without the use of moving parts. Equipment is comprised of a lower channel, forming an air chamber, having an upper surface of porous material, which supports a stream of material. The latter is sufficiently fluidized by air passing through the fabric, that gravitational force causes the material to flow through an upper channel.

Design features a porous medium of low air permeability, assuring uniform distribution of low-pressure air (usually at fan pressures) in the air chamber, below the porous medium.

When this den is full, the mixture is allowed to cure for 20 minutes, then the front and sides are swung away, leaving the damp and firm mixture standing on the concrete base. This base is mounted on wheels which run on a short length of track, and as the load is slowly driven forward, the superphosphate mixture comes in contact with rotating blades which knock it off the concrete base and into a hopper at the side of the tracks.

Storage

The mixed superphosphate is lifted from the hopper into which it was thrown by the rotating blades and carried to the top of

one end of the storage area on a bucket conveyor. The buckets dump onto a conveyor belt which runs to the center of the building under the monitor top. Under this belt is a shorter, shuttle conveyor on rails, which permits the superphosphate to be dumped at any desired point along the length of the building.

Since the acid and phosphate do not complete their reaction in the 20 minutes allowed in the den, it is important that they remain in storage for about three weeks so the chemical action may be completed.

Superphosphate which has been thoroughly cured is picked up with a small, gasoline powered shovel

and dumped onto the end of a long, covered conveyor belt which leads to the dry mixing plant to await mixing with the other fertilizer ingredients.

Management Likes Design

Mr. Dudley George, Chief Engineer, who was in charge of plant design and construction, agrees with the rest of management at Richmond Guano Company, that the steel and corrugated asbestos cement building construction and the layout and design of the various types of materials handling equipment provide them with a plant which is efficient and will give long life with a minimum of maintenance.

FIBERFRAX . . . A New Refractory Fiber

Lightweight (2 lb/cu ft), ceramic refractory fiber—vitreous aluminum silicate, maintains properties at 2300 F temperatures.

A NEW MATERIAL, developed by The Carborundum Company, resists temperatures that melt cast iron, yet its fineness is such that it can be used as a superfilter, or as a base for entirely new types of insulation. Manufacture of Fiberfrax fiber involves the same type of

electric-furnace melting that produces aluminum oxide abrasives.

It is adaptable to the refractory markets because its high heat resistance, light weight, and low heat transmission make it competitive with insulating refractories for industrial furnace insulation. The

company emphasizes that its attendant properties: filtration efficiency, electrical characteristics, and sound-deadening ability will make it desirable for use in the aviation, electrical, papermaking, and chemical fields.

Insulation tests show that Fiberfrax fiber, as compared to high-quality refractory insulating brick, can make impressive savings in weight and furnace efficiency. Compared to high-quality cemented refractory insulating brick, company tests show that thirty percent less electrical power is required to maintain furnace equilibrium at 2500 F. Time required to bring the furnace up to temperature is cut in half.

Fiberfrax fiber is an excellent furnace insulator. Two pounds of the fluffy white material packed to a 6 lb/cu ft density fill the same volume as 14.6 lb of high grade refractory insulating brick. But the two pounds of Fiberfrax fiber can actually furnish the insulating efficiency of 20.9 lb of high grade refractory insulating brick.



PRODUCT BRIEF

What is Fiberfrax?—A vitreous aluminum silicate, presently available in a fluffy, white mass made up of random arrangements of extremely fine fibers. It is a patented development of the Carborundum Company, Niagara Falls, New York.

How is it made?—By melting aluminum oxide, silica, and certain modifying agents in an electric furnace, then subjecting a molten stream of the material to an air blast. Stream is blown into fine fibers which are collected.

Availability—At present available only in bulk form. Work is under way to produce it in felted blanket rolls, firmly bonded batts, tape, and paperlike forms with wide range of thicknesses and characteristics.

Applications—Thermal insulation (furnaces and other high temperature applications, jet engines, fireproofing safes and containers, piping, reinforcement of electrical motors, resins, foundation for containers; Resilient Support (vibration dampening, support for articles being fired or heat treated); and filtration of gases and liquids and as a diffusing medium.



Process Steam at South West Box Co.

PROCESSING heavy kraft paper into tough corrugated box board at the South West Box Co., Sand Springs, Oklahoma, calls for a steady 195 lb. steam pressure to give needed temperatures in the steam jacketed cylinders and drying plates on the company's modern 307 ft. Langston corrugating machine. To supply these needs, Mr. Fritz Thieme, Chief Engineer for Hoerner, purchased a gas fired Vapor-Clarkson steam generator Model 4740. South West Box Co. is one of nine box plants operated

UTILIZATION—for corrugating machine (cylinders, adhesive, drying plates), cleaning, heating plant through unit heaters, making starch glue, and for paraffin wax machine.

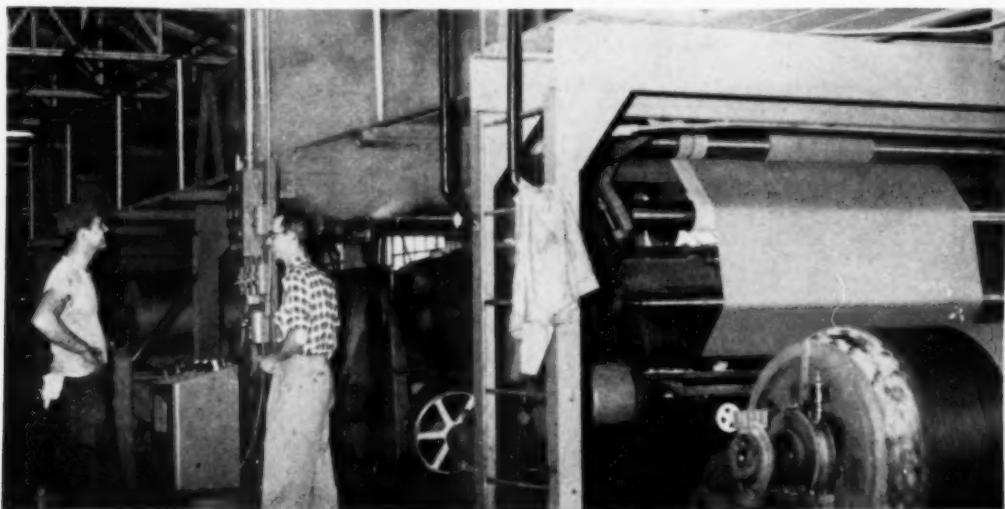
GENERATION—Vapor-Clarkson, packaged unit, gas fired steam generator, producing from 1000 to 5000 lb of 99 per cent dry steam per hour, at pressures from 75 to 300 psi.

by The Hoerner Corporation of Keokuk, Iowa.

The new corrugating machine is

processing 80,000 sq. ft. of corrugated box board per hour, using 175 lb. steam pressure, and up to 100,-

South West Box Company's new Langston 85 in. corrugator, processing 500 linear fpm. Operator is standing in front of the automatic control panel for the 300 ft long machine. Plant is processing over 90,000 sq ft/hr.





Steam melts the paraffin in the tank (portion shown at upper left) which is fed down between the steam heated rollers to give a wax coating to bugger cartons. At the right, steam is being used to clean glue, trim, dust and grease off all parts of the corrugator. Operation is performed after the second shift. Two of the steam traps on the corrugator are visible in the background. Condensate is returned to the steam generator.

000 sq. ft./hour using 195 lb. steam pressure. Several day shift runs have averaged over 95,000 sq. ft./hour and output is steadily increasing as the crew becomes more proficient in the corrugator operation.

During the past summer one Vapor-Clarkson steam generator has automatically produced all the processing steam—from 1000 to 5000 lb. of 99 per cent dry steam per hour, at pressures from 75 to 300 psi.

The old boilers are tied in so as to

supply additional steam if the steam pressure on the drying plates drops to 140 lb. These will be used at times during the cooler months when the stock is cold and to supply part of the building heat load.

Mr. Thieme emphasizes that one of the important advantages of the new steam generator is its ability to produce ample high pressure, dry steam, at the single face end of the machine, where adhesion must take place as the heavy corrugated paper makes contact at 500 fpm.

Utilization includes the corrugating machine—175 to 195 lb. pressure when producing 80,000 sq. ft. of box board per hour, 195 steam pressure when producing 90,000 to 100,000 sq. ft./hr. Steam heats the jacketed cylinders, corrugating cylinders, keeps the adhesive solution hot, heats the drying plates held at 350 F., and is directed by small jets on the kraft paper being processed.

The corrugating machine is

(Continued on page 67)

S. J. Jones. Plant Superintendent of South West Box, stands in front of the Vapor-Clarkson steam generator, which provides all of the plant's processing requirements.

This rear view of the steam generator shows the Elgin water softening system tank and the blow down tank at the left. Coals are blown down for about one minute every eight hours.



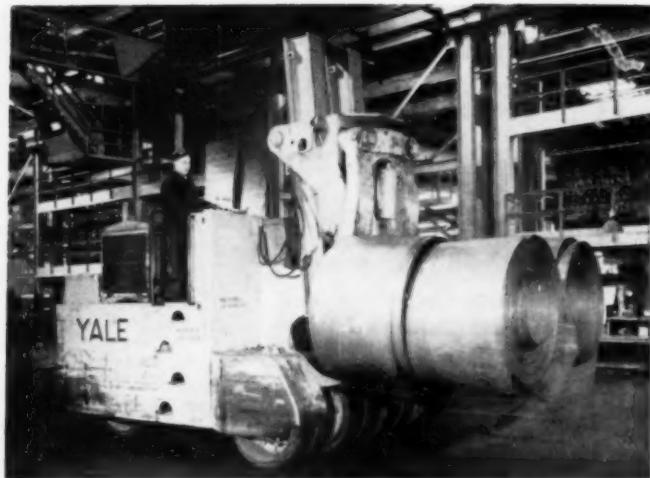


Fig. 1. Introduction of continuous wide-strip mills which roll coils up to 5000 fpm made it difficult to move the product away fast enough. Also there is an advantage in increasing the size of coils from the normal 30,000 or 40,000 lb to 60,000 or 80,000 lb because the quality is improved by fewer "ends" which are usually off-gauge and rejected. This is a gas-electric truck with a 165 hp Diesel engine driving a 90 kw motor. It will handle one large coil or two smaller coils.

Industrial Truck Cost Analysis

Handling with trucks depends on operator skill and advance cost estimates are difficult. Yet, sufficiently accurate data may be had if you really analyze the job.

NOT so long ago the engineer was faced with occasional problems unsolvable with any type of conveyor. Then the industrial motorized truck appeared on the scene as the simple answer to some conditions previously possible only with manual labor; and today it is one of the really important members of the materials handling family. Of course the field of materials handling is as broad as industry

itself, and the range is all the way from where either a truck or conveyor will do a good job, to where a truck is unsuitable, or to where the conveyor cannot possibly solve the problem and the truck may do so very efficiently.

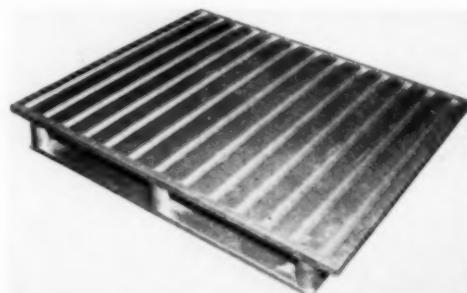
The motorized truck is a difficult machine to evaluate accurately because it alone (excluding the grab bucket hoist and the powered scraper) is directly dependent on

By **WILBUR G. HUDSON**
Consulting Engineer

the degree of skill attainable by the available personnel. However, a man of average intelligence soon develops the required skill, and then the truck as compared with manual handling frequently shows cost reductions as high as 90 per cent. Rather oddly, young women make very good operators—perhaps they are less adventurous.

Although it is difficult to predict accurately whether the purchase of

The single-face skid, below, is bound, has rounded corners and flush angles and countersunk bolts, and costs about \$10.00. The 4-way double deck aluminum pallet at right is also available in a cheaper wood model at about \$4.00.



trucks is justified, usually a manufacturer will lend a prospect a machine and skilled operator, and the possibilities can be ascertained by actual trials.

Pallets & Skids

Along with the truck came the pallet and skid. Pallets, preferably double faced, are cheap and may or may not be considered expendable for outgoing shipments. They are built so the truck forks can enter from two sides or four sides for the lift. For tiering, the pallet stacks up better than the four-legged skid.

A simple form of truck is that shown in Fig. 3. The operator walks, but the load is raised and lowered by power, and travel is motorized with control from the handle bar. Fig. 4 shows a diagram of a similar machine. For tiering, the high lift fork truck, Fig. 5, can lift up to six feet, or with extension mast, as high as ten feet. The operator rides the truck so the speeds are higher. Aisle widths for four foot square loads are given in Table 1. Wider aisles are decidedly advantageous.

Type of Operation

When planning a motorized truck installation allowance must be made for acceleration, turning around, moving into position to pick up loads and releasing them, and incidental delays, which collectively may be termed the delay factor. This factor is greater for short trips and smaller for long trips. It varies also with the skill of the

Table 1—Aisle Widths for Four Foot Square Loads

Up to 2000 lb loads	10-ft 6-in. aisle
Up to 4000 lb loads	12-ft 6-in. aisle
Up to 6000 lb loads	14-ft 0-in. aisle

Table 2—Delay Factor

Length of Route Feet	Delay Factor or Ratio of Elapsed to Running Time
50	2.5
100	2.0
250	1.5
500	1.2

Table 3—Tractive Resistance With Anti-Friction Bearings

Kind of Surface	
Smooth concrete or wood block	30 to 50 lb/ton
Smooth hard mastic	30 to 50 lb/ton
Granite block, rough brick, etc.	50 to 70 lb/ton
Gravel	60 to 75 lb/ton

Table 4—Total Operating Cost for Two Ton Low Lift Truck

Net price of truck	\$2500.00
Cost of one set of tires	150.00
Depreciation basis	2350.00
Depreciation: 6% of \$2350.00	\$131.00
Annual tire cost	150.00
Net price of battery \$500.00. 16½%	82.50
Cost of charging equipment \$800.00. Depr. 5%	40.00
Maintenance of truck	75.00
Maintenance of battery	35.00
Maintenance of charging equipment	12.50
Charging current	45.00
Insurance	12.00
Total per year	\$583.00
Total per 8-hr day, at 260 days per year	2.24

Table 5—Cost Per Ton Handled

Hours per Day	Total Trips Made	Tons Handled	Cost of Truck	Cost of Wages	Total per Day	Cost per 100 Ton-Ft
½	26	52	\$2.24	\$.60	\$2.84	5.47 cts
1	53	106	2.24	1.20	3.44	3.25
2	106	212	2.24	2.40	4.64	2.19
4	212	424	2.24	4.80	7.04	1.66

Table 6—Comparison with Hand Trucking Costs

Hours per Day	Tons Handled	Power Trucking Cost	Hand Trucking Cost	Annual Saving	Per Cent Return
½	52	\$2.84	\$ 9.62	\$ 1,760	46
1	106	3.44	19.60	4,210	111
2	212	4.64	39.20	8,960	236
4	424	7.04	78.40	18,510	489



Fig. 3. Low-lift platform truck placing loads on platform elevator. A similar truck will remove the loads at another floor.

operator. As a guide, see Table 2.

Thus if we assume that 1200 two-ton loads mounted on skids are to be moved 100 ft in one 8-hour shift, and have ascertained from the manufacturer that a 2-ton low lift truck with speeds up to 400 fpm loaded, and 500 fpm empty, the theoretical time for one round trip is:

Pick up load	4 sec
Carry 100 ft	15 sec
Release load	3 sec
Return light	12 sec

Total 34 sec
 Applying the factor of 2.0, the time per round trip is increased from the theoretical 34 sec to 68 sec. One truck may be counted on for 53 trips per hour and 424 trips per 8-hour shift. To handle 1200

loads, three trucks are indicated. As with other operations which are affected by fatigue of the operator, it is suggested, however, to use a fifty-minute hour.

The character of the surface over which trucks will function must be considered. The required pull is expressed in pounds per ton of gross weight of truck or tractor, plus the load moved. This varies widely with the condition of the surface over which the work is done. See Table 3.

An average of 40 lb per ton for modern, well kept plant floors is a good figure. If grades are involved,

allow 20 lb per ton for each rise of one foot in 100 ft.

Three Types

There are three types of stand-ardized motorized trucks. The *gas-mechanical* is powered by a gas-oline engine, with mechanical transmission and control, just as in an automobile. The *gas-electric* is pow-ered by an engine-generator which drives the traction motor, as in the modern commercial truck or bus. The *battery-electric* is powered by a storage battery and motor.

The first two are advantageous

Fig. 5. Essentials of the fork truck with lift up to 119 in. for tiering. The pivoted rear wheels permit turning in a 141 in. aisle. Speeds of 90 to 500 fpm are best adapted for usual operations inside the plant.

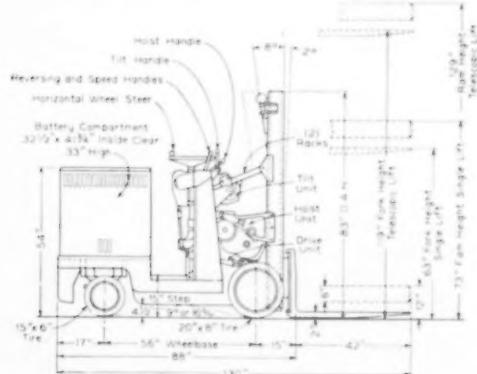
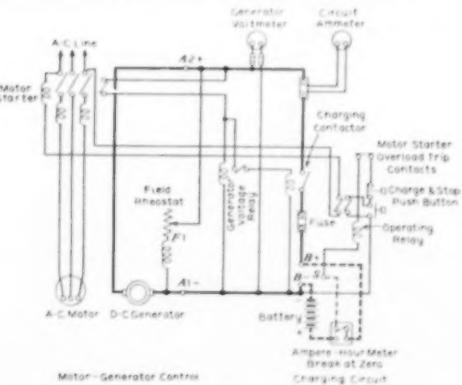


Fig. 6. Diagram of single battery charging circuit from a-c source. Where operations are conducted on several floors it may be desirable to provide a powered battery hoist so exchanges can be made on any floor.



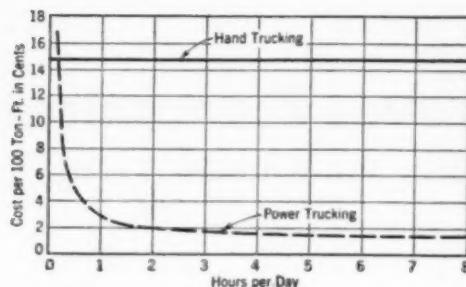


Fig. 7. Relation between power-trucking and hand-trucking costs.

Fig. 8. Forks on the rotating head slip into pockets and hold the container firmly as the contents are dumped.

where trucks are moved from place to place, or where electric power is not conveniently near, and where operations are intermittent with long intervals of idleness. With a gas-mechanical or gas-electric machine certain ventilation standards must be observed, and may be ascertained from the Underwriters Laboratories (Associated Factory Mutual Fire Insurance Companies, Boston, Mass.).

There are certain fire hazards which cannot be wholly eliminated. Most of the fires, however, occur from gasoline spilled during refueling. It is required that the muffler be of a type which prevents sparks in the exhaust.

Battery powered trucks have an excellent fire record, in part due to suitable motors, wiring and switches.

The battery-electric truck requires a charging station. Usually 6 to 8 hours are required to charge a battery, so it may be necessary to have a spare battery. A 4000-lb capacity fork truck moving and tiering will use 10 to 14 kwh of battery energy in an 8 hr shift.

Cost Studies

An analysis for arriving at the total cost of operating a truck and its comparison with hand trucking is given in Table 4. A two-ton capacity low-lift truck is assumed.

We will let the cost per day remain at \$2.24, even though the truck works but a fraction of a day, and take the operator's wages as \$1.20 per hour. Then we have sufficient information for Table 5.

The total investment for truck and charging equipment is \$3800.



The amount earned on the investment in comparison with hand trucking may be estimated thus, assuming the laborer's wage at 65 cents per hr. On the basis of 3½ tons per hr the cost will be 18.5 cents per ton. Now the comparison can be made as in Table 6.

Hand trucking cost per ton-foot remains substantially unchanged with increasing volume, up to the point where congestion occurs. Fig. 7 shows a method of charting the relation between trucking and power trucking. No doubt the fig-

ures shown in the tables are subject to some discounting as the skill of operators varies so widely, but there are related profits from smooth flow of materials, savings in lost time of skilled workers at the machines, decreased congestion in production and storage areas, advantages of high tiering.

The industrial motorized truck has made a place for itself. For many operations it needs the co-operation of a conveyor, but for many others it does what the conveyor cannot attempt.

Process Steam at South West Box

(Starts on page 62)

steam cleaned daily—a preventive maintenance operation performed after the second shift when the machine is shut down. High pressure steam jets out of the 3 long hoses with $\frac{3}{4}$ in. nozzles thoroughly clean the unit.

Steam pressure is reduced to 20 psi in the 4 in. feed line to supply unit heaters. Gas room heaters are used in the offices. Starch glue is cooked in 660 gallon batches and steam also melts the paraffin for the wax machine, which gives a wax coating on cold storage butter cartons.

Generation

The steam generator develops 200 lb. pressure in 2 min. from cold water, producing 1000 to 5000 lb. of steam per hour. Although manufactured to burn either natural gas or fuel oil, the unit is gas fired. Once started, automatic controls

take over causing the machine to turn on and off and modulate steam output to meet the steam demand at various predetermined pressures.

Plant operating personnel emphasize that steam is made only when it is needed and in the proper quantities. Safety features include electric eye steam temperature limit controls. Less fuel is needed, as the steam generator can be shut off in the summer during non-operating hours. Labor savings are also noted—the unit requires less than 15 minutes operator attendance per 24 hour day. The steam generator was delivered as a complete package, including the blower, firepot, and feed water pump. This resulted in lower installation costs. No special room or walled-in area is needed, and no tall stack is required, as the units have forced draft.

Dual-Fuel Engine Proves Economical at Mission Water Pumping Station, San Antonio, Texas

THREE dual-fuel engine driven centrifugal pumps in Mission Station are doing an increasing share of the pumping job, and are operating at the lowest cost of any units in the entire San Antonio, Texas, water system.

Mission Station was built in 1922, and originally only had three electric motor driven pumps. The station was intended as a standby installation but rapid postwar increase in water consumption necessitated expansion and regular use of the station.

In 1949, the city put into full operation three 8,000,000 gallon per day Fairbanks-Morse centrifugal pumps driven by three 6-cylinder, Fairbanks-Morse, dual-fuel engines, each rated 390 hp at 514 rpm. The engines drive the pumps at 1045 rpm through herringbone gears.

Exhaust side of engines, showing fuel lines and filters. The Falk gears are in the center, the Fairbanks-Morse pumps on the right. Water lines are under the grating. These dual-fuel engine driven pumps handle 1,000,000 gallons of water for a fuel cost of \$3.46.

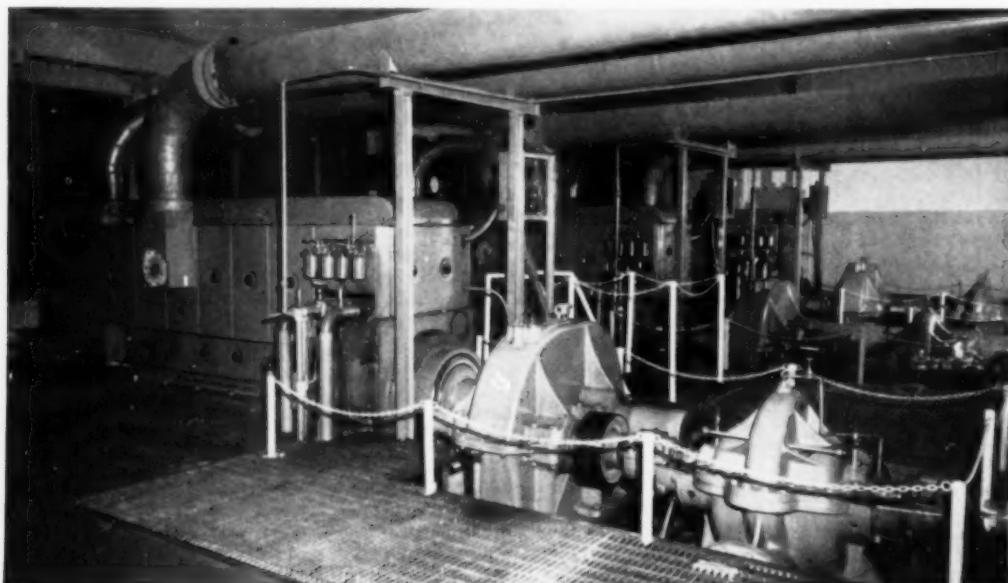
Three-year operating record proves dual-fuel engines dependable. Operating at high efficiency on low price fuel, they boost water pressure at low cost per million gallons.

Ten artesian wells deliver water at 10 psi to a suction header which runs the length of the plant. The new single-stage, double-entry centrifugal pumps, with 14-in. suction and 12-in. discharge, and 23½-in. impellers, discharge into the outgoing mains at 97 psi.

Since installation of the new pumps and engines, the station has been called on for large volume service. It handled 16,500,000 gallons per day last summer with an evening peak at a rate of 22,000,000 gpd. The engine-driven pumps

now do the bulk of the work, while the old electric pumps are maintained in operating condition for true standby service. During the first three full years of service, the dual-fuel units handled 7,317,000,000 gallons of water.

The basis of the dual-fuel economy is efficient operation on low-cost fuel. Natural gas is abundant in Texas and these engines use just 4.6 cu ft of gas to pump 1,000 gallons of water. A small constant charge of diesel fuel is injected to insure ignition of the gas. For this



<i>Engines</i>	Three Fairbanks, Morse & Co., 390 hp., 6-cylinder, 2-cycle, dual-fuel engines, operating at 514 rpm.
<i>Pumps</i>	Three Fairbanks, Morse & Co., 8,000,000 gpd, 12-in., 14-in. suction, 23½-in. impeller, 1045 rpm, single-stage centrifugal, double-entry.
<i>Gears</i>	The Falk Corp., herringbone, ratio 2.032 to 1.
<i>Cooling water pumps</i>	Fairbanks, Morse & Co.
<i>Lube Oil</i>	The Texas Co., Texaco Ursa.
<i>Fuel filters</i>	Purolator Products Inc.
<i>Lube filters</i>	Fairbanks, Morse & Co., bypass lube filters; Cuno Engineering Co., full-flow lube filters.
<i>Exhaust silencers</i>	Maxim Silencer Co.
<i>Air filters</i>	American Air Filter Co., Cycloil.
<i>Exhaust pyrometers</i>	Illinois Testing Laboratories, Inc., Alnor.
<i>Water meters</i>	Bristol Co.
<i>Tachometers</i>	Weston Electrical Instrument Corp.
<i>Oil cooler</i>	Ross Heater & Mfg. Co.
<i>Heat exchangers</i>	Ross Heater & Mfg. Co.
<i>Governor</i>	Woodward Governor Co.

purpose, each engine uses 2 gallons of pilot oil per hour.

Lubricating oil is circulated through each engine by a built-in pump. Included in this pressure circuit are a full-flow filter and a shell-and-tube oil cooler. Some lube is by-passed continuously from the pressure system through a multi-cartridge cellulose filter. Lube consumption has been just 2 gallons for 24 engine hours. This results in 4,680 rated horsepower hours per gallon of lubricating oil.

The steady flow of water from the artesian wells provides an excellent source of cooling water. Raw water at 70 F is bled from the suction header and put through the oil coolers and jacket water heat exchangers, after which it is pumped back into the line by engine-driven centrifugal pumps. Each engine has a separate soft water circuit with an engine-driven centrifugal pumping water through engine jackets and the heat exchanger. The soft water at 15 psi enters the engine at 142 F and leaves at 160 F.

Scavenging air is drawn from outside the plant through oil bath filters. Each filter requires 18 gallons of lube oil which is replaced each 6 months if conditions are very dusty. Exhaust gases vent

through vertical silencers outside the plant.

Control equipment for the plant is compact and complete. A single

lever on the engine is used to stop and start the engine and also can be used to switch instantly from dual-fuel to full diesel operation. Adjoining the control lever are the governor and an emergency shutdown control. Beside each engine is a separate panel with gauges, exhaust pyrometer and an automatic alarm system.

The plant has a central control panel which indicates and records suction and discharge pressures, and pumping rate of each engine-driven pump. There is also a tachometer to show rpm for each unit.

Chief Engineer *F. A. Sturm* reports full satisfaction with the performance of the engines and pumps. Maintenance is kept to minimum but a program of preventive care is followed to keep equipment in peak condition. Pistons are pulled for inspection once a year.

More than 3 years of experience at Mission Station have proved that these dual-fuel engines provide a dependable source of power for pumping and effect substantial economies in operating costs.

Steam Cleaning for Repairs

A MAJOR portion of the business volume of The Brewster Co. in Shreveport, Louisiana, manufacturer of oil field equipment, is the overhauling and reconditioning of drilling and pulling rigs.

When brought in, these rigs are covered with heavy deposits of mud, grease, and oil. Equipment is steam cleaned to show defects, spot wear, and to speed up mechanics' time.

Steam cleaning has saved as much as 40 per cent of time by eliminating hand wiping.

Malsbary Model 327 used to clean engine for drilling hoist at The Brewster Co., Shreveport, Louisiana. Delivering volumes up to 900 gph at pressures up to 400 psi, unit cleans this 145 GK drilling hoist engine in 1/3 the time required by small capacity vapor pressure cleaner. It is 8 to 10 times as fast as hand cleaning.



Fuel Savings in Atlanta Laundry

A CONVERSION BURNER was installed under a 150 hp Titusville boiler in the Apex Linen Service plant in Atlanta, Georgia, about a year ago. The Orr & Sembower Voriflow* burner is designed for burning gas with light oil for standby. Steam is generated at 125 psi for normal linen service operations—wash water heating and drying and pressing.

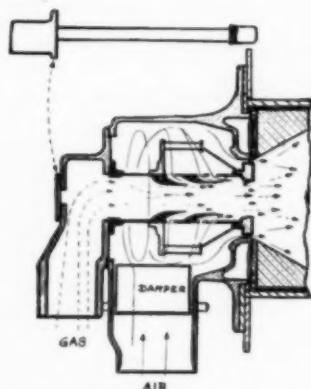
Gas Burner

The gas burner is of a pre-mix design which is especially suitable for the low pressure gas available in the gas mains in the downtown

By B. B. CORVETTE, JR.

Service Manager
Spotswood Parker & Company
Atlanta, Georgia

Atlanta area. Gas flows through the central gas nozzle from the gas plenum. Simultaneously combustion air from the blower enters the air plenum tangentially, automatically controlled by the motor operated damper. Primary pre-mixing air is captured by stationary register vanes. This assembly directs the pre-mixing air through holes into the gas nozzle against



For conversion to gas, the oil nozzle assembly is simply removed and a dummy head substituted to seal the gas plenum. Changeover takes about four minutes.

venturi-shaped air baffles. Air and gas are thoroughly mixed enroute through the gas nozzle. The outer annular space ring controls the amount of secondary combustion air admitted to the chamber. Ignition takes place at this point. The pre-mix burner design has permitted relatively high over ratings with low excess air and high efficiency in the limited combustion space available.

Oil Burner

Oil burner is of the air-atomizing design. Only about 1 per cent of the total full load combustion air is admitted with the oil for atomization, which permits much closer control of the combustion air from the blower and resultant high efficiency at light loads. The excellent flame pattern and con-

(Continued on page 75)

Mr. B. R. Cohen, President, Apex Linen Service, Atlanta, Georgia, looks over the Orr & Sembower Voriflow combination oil and gas burner under his Titusville boiler.

*Voriflow oil and gas burners are ordinarily made only for use on the manufacturer's own Powermaster packaged automatic boilers. However, a few have been furnished for conversion service.



New Boiler Plant at Alabama Tech

TO KEEP PACE with the growing need for trained technical men, Alabama Polytechnic Institute started a building expansion program in 1946 which involved an initial outlay of five and a half million dollars by the end of 1950. By the end of 1952 total expenditures for new construction will have reached seven and a half millions.

An important part of the plant expansion has been the installation of a new high pressure steam heating plant. In 1946 plans were laid for a new boiler plant and a building to house 900 boiler horsepower in three units, with necessary auxiliaries, was projected.

It was decided that low-head, 3-drum type boilers would come closest to satisfying the predicted requirements, and the original plans of the new boiler house included a 150 ft radial stack of sufficient capacity to handle three 300 hp boilers.

The 3-drum boiler was selected because of its stability when operating under widely varying or heavy heating loads. Its responsiveness to quick changes in load and its ability to produce dry steam regardless of the load being carried were important factors in its favor. Since coal is in constant and satisfactory supply in the area, it was decided to fire the boilers with pneumatic type spreader stokers.

PRINCIPAL EQUIPMENT

Boilers—Erie City Iron Works, Type C.

Stokers—Iron Fireman Manufacturing Co., Pneumatic Spreaders.

Soot Blowers—Copes-Vulcan Division, Continental Foundry & Machine Co.

Combustion Controls and Instruments—Hays Corporation.

Pumps—Nash Corporation.

Feedwater Heater—Chicago Heater Corporation.

Heating plant was designed by H. L. Holman, Architect, Ozark, Alabama, with C. P. Lichy of Birmingham, Alabama, as engineering consultant. Construction was handled by Daniel Construction Co., Birmingham, Alabama.

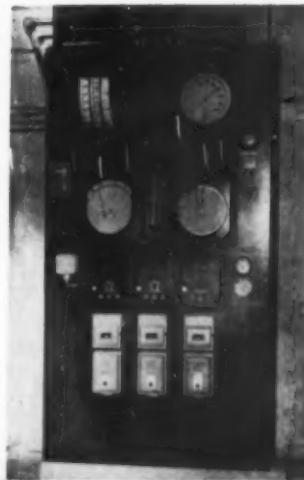
The first boiler and stoker were installed in 1947 to serve Magnolia Hall (the men's dormitory), and Drake Infirmary.

Between 1947 and 1950 the new architecture building, Biggin Hall, the Wilmore Engineering Laboratory and the new education building, Thach Hall, were completed. And their addition to the steam load made it necessary to install the

(Continued on page 80)

Panelboard features Hays combustion controls and instruments.

The Erie City Iron Works, Type C boilers and Iron Fireman Manufacturing Co., pneumatic spreaders. Note spacious firing cible.



ELECTRICITY and ELECTRIC POWER

Part 7—Instruments and Meters

The seventh in a series of articles which explain the fundamentals of electricity in a way the man-in-the-plant can understand and use to his own advantage.

INSTRUMENTS and meters are devices that all plant electricians, maintenance men and mechanics should be familiar with, and understand the workings of, because those devices are important tools. And while it is not necessary that plant men be "experts" on the subject, it will give the maintenance staff a better appreciation and understanding of the why and how of such devices if they know something of the design and functioning of instruments and meters.

American Standard Definitions of Electrical Terms defines an instrument as "a device for measuring the present value of the quantity under observation. An instrument may be an indicating instrument or a recording instrument." We may, therefore, classify as "instruments" such electrical measuring devices as:

Voltmeters
Ammeters
Wattmeters

It will be noted, strangely enough, that although the devices just listed are called "instruments," all of them have the suffix "meter." *American Standard Definitions of Electrical Terms* states that "the term 'meter' is also used in a general sense to designate any type of measuring device including all types of electric measuring devices."

On the other hand, the same reference work defines a "meter" as follows: "An electricity meter is a device that measures and registers the integral of an electrical quan-

tit y with respect to time." Under this classification we would have:

Watt-hour meters
Demand meters

I suggest that, to avoid confusion, it would be helpful to think of voltmeters, ammeters and wattmeters as "instruments" and watt-hour meters and demand meters as "meters."

In general, ammeters and voltmeters all operate on the same basic principles even though there are several types. These instruments are:

Electrostatic
Electrodynamic
Electromagnetic
Thermal

All of the various types have certain characteristics that make them desirable for use; but to discuss each type in an article of this kind would require time and space that is not warranted here. Rather, it is thought that to take one type of instrument and give a detailed account of how and why it works, will afford the best understanding of the subject to the man in the plant. The type that we will discuss here is the Electromagnetic Type. Later, when we talk about wattmeters, we will discuss another kind.

The electromagnetic instrument is sometimes referred to as the "moving iron" type because strips of soft iron are used in its construction and also because the action of the iron strips is the key to its ability to perform.

By ROY W. WAGES

Division Industrial Power Engineer
Georgia Power Company
Columbus, Georgia

Fundamentally, an ammeter of the electromagnetic type consists of (1) a coil of a few turns of wire through which flows the current that is to be measured; (2) two strips of soft iron, one of which is in a fixed position with respect to the coil of wire, and the other is attached to a pointer device; (3) a scale; (4) a damping vane; (5) suitable terminals; (6) box and cover.

This is how it works: The current to be measured flows through the coil which is made of a few turns of wire. The action of the current flowing through the coil produces a magnetic field. This action, in turn, polarizes the two strips of soft iron. Now, once these two strips of soft iron have been polarized (remember that one is fixed with respect to the coil and the other is attached to the moving element or part) a magnetic moment is produced or set up on the moving element. This torque is created because of the magnetic reaction set up between the two pieces of iron. That torque, or turning moment, causes the moving element, which is attached to the pointer, to turn and thus move the pointer across the scale. To balance the torque thus created, a spring is used to hold the pointer at zero on the scale when no current is flowing through the ammeter. The damping vane performs the duty that its name indicates: that is, it causes the pointer to move in a positive swing rather than a series of oscillations.

The terminals provide an easy and ready means of making connections to the conductor carrying the current to be measured and the purpose of the box and cover is obvious.

Ammeters, since they measure

the current, have to be connected in series with the source of power and the load.

Electromagnetic Voltmeter

An electromagnetic voltmeter, as stated before, operates on the same basic principle as an electromagnetic ammeter. The big difference between the ammeter and the voltmeter is that, whereas the ammeter has a coil of a few turns, the voltmeter has a coil of many turns. The voltmeter is connected across the conductors of which the potential is to be measured.

Wattmeters

Wattmeters operate on much the same general principles as ammeters and voltmeters—there are wattmeters of the electromagnetic, electrodynamic, electrostatic and thermal classifications. Most of the wattmeters used today are of either the electrodynamic type or the electromagnetic type.

We could quickly pass by the electromagnetic type by saying that this kind of wattmeter is an induction type of instrument which, fundamentally, operates on the principle of rotating fields produced by two out-of-phase alternating currents, and is, essentially, little more than an induction motor. But such a course would hardly be of help to a man in the plant. So let's pursue the subject further by discussing another type wattmeter.

To properly understand the functioning of the electrodynamic wattmeter, it will be necessary to study, at least to some extent, the functioning of an electrodynamic ammeter and voltmeter. This kind of ammeter has two coils rather than one coil like the moving iron (electromagnetic) type previously described. The two coils are connected in series. One coil is fixed; the other coil is suspended outside the fixed coil by a spiral spring. This is how it works:

When the current to be measured is permitted to flow through the coils, a magnetic field is set up and, as a result, the movable coil tries to move over in a position parallel to that of the fixed coil. A pointer is attached to the movable coil. This pointer, in moving over the scale on top of the instrument, indi-

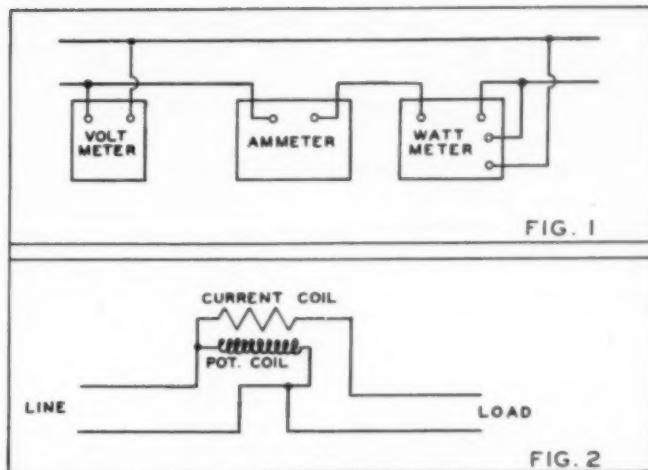


FIG. 1

FIG. 2

cates the flow of current in terms of angular displacement between the coils.

Now, an electrodynamic wattmeter is basically the same kind of an instrument that is an electrodynamic ammeter or voltmeter. However, in the wattmeter the two coils are not connected in series. Instead, the fixed coil is connected in series with the load; and the movable coil is connected across the line. The movable coil is connected in series with a suitable resistance which is of a relatively large value. Now, since this resistance is relatively large; and the inductance of the movable coil is relatively small, the reactance of the movable coil is virtually nothing. Therefore, the current in the coil is virtually in phase with the line voltage.

A diagram showing ammeter, voltmeter and wattmeter connections for a simple circuit is shown in Fig. 1.

Many a plant man has asked why it is that, if the voltmeter measures volts; and the ammeter measures amperes; the wattmeter, being basically the same kind of instrument, measures watts instead of volt-amperes.

It's a good question. For you will recall from study of our earlier articles, that we said the "apparent" power in an alternating current circuit was $E \times I$ or volt-amperes; and that the "true" power was $E \times I \times \text{Power Factor}$, or watts.

You will also recall that in our article on Power Factor we described power factor as being the cosine of the phase angle between the current and the voltage; and, if we designate that angle as ϕ then the expression for WATTS (or "true" power) is $E I \cos \phi$.

How, then, does the wattmeter measure watts? Well, it does so because the deflection of the pointer or indicator of the wattmeter is proportional to the quantity $E I \cos \phi$. The instrument accomplishes this task as follows.

We said awhile ago that (1) the stationary coil of the wattmeter was a *current* coil connected in series with the load; (2) the movable coil was a *potential* coil connected across the circuit; (3) the movable coil carried the pointer or indicator which moved across the dial of the instrument.

Now, when the current is allowed to flow through the stationary coil, it creates a magnetic field that is in phase with the line current and proportional to that current. Likewise, when current is allowed to flow through the potential coil, that current is in phase with the voltage and proportional to it. This current also creates a magnetic field.

Thus two magnetic fields are created.

Now, the action of the indicator, or turning moment of the indicator, results or is derived from, the re-

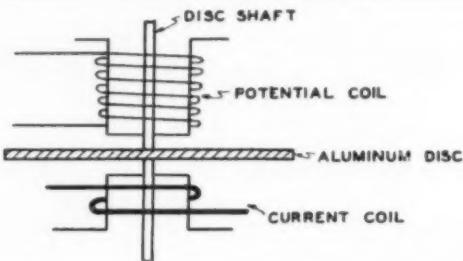


FIG. 3

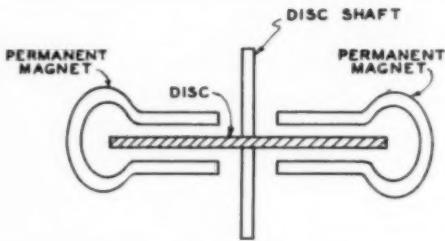


FIG. 4

action that those two fields have upon one another. And, furthermore, because of the behavior of the potential and current fields as explained above, the resultant force, which tries to turn the movable coil (that carries the pointer) is proportional to the instantaneous product of the instantaneous current and the instantaneous voltage.

The instantaneous force acting on the movable coil (which carries the pointer) is, then, a measure of instantaneous power. Moreover, since the alternating action of the current tends to push the indicator backward one moment and forward the next; and since the coil springs of the instrument exert a constant force in a forward direction on the pointer; the pointer, not being able to follow the fast pulsations of the effect of the alternations, assumes an average position resulting from, and corresponding to, an average of the instantaneous forces acting on the movable coil.

Let's stop there for a moment and recall what we learned in an earlier article: If we plot or draw the instantaneous power curve of a circuit, and from that, plot an average curve, then that average curve represents the mean or average power of the circuit—true power (watts), not volt-amperes.

Therefore, since the wattmeter's indicator assumes an average position as explained above, the indicator denotes true power or watts.

With some understanding of ammeters, voltmeters and wattmeters, we can now begin our discussion of watt-hour meters and demand meters. But first, let's preface our presentation with a refresher course on watt-hours and watts.

You will recall from our article on "Kilowatts and Kilowatt-hours" that we defined "watts" as the rate of consuming energy; and stated that a kilowatt-hour, or a watt-hour, was a unit of energy: that it was the result of power consumed over a given period of time. In other words, if a 200-watt bulb is burned continuously for five hours, the total energy consumed during that period of five hours would be $200 \text{ watts} \times 5 \text{ hours} = 1000 \text{ watt-hours}$ or, in commercial terms: 1 kilowatt-hour.

A watt-hour meter, then, is a device for measuring the consumption of electrical energy. Or, as defined by *American Standard Definitions of Electrical Terms*, a watt-hour meter is "an electricity meter that measures and registers electric energy in watt-hours (or kilowatt-hours)."

Briefly, a watt-hour meter is

nothing more than a small motor that rotates at a speed proportional to the energy flowing through the meter, connected by a geared shaft to a dial or a register. But that short definition or description will not suffice for a full understanding of the device. To really learn about the workings of a watt-hour meter, we will have to go back to fundamentals.

Perhaps it would be best to start with a list of the parts of an induction-type watt-hour meter. A watt-hour meter of this type consists of: (1) an electric motor that operates on the same general principles as any other induction-type motor (2) a registration device (3) a retarding element that acts as a kind of magnetic brake (4) case and cover.

That's all there is to a watt-hour meter. It is not the mysterious gadget that a lot of people make it out to be. As stated a moment ago, the motor rotates at a speed proportional to the energy consumed and, as it rotates, it turns the register that is calibrated to read in kilowatt-hours.

Here is how it works: The "motor" part of the meter consists of two coils of wire and an aluminum disc. One of these coils is called the current coil and is made up of a few turns of wire. This coil is connected in series with the line to be metered. The other coil is called the potential coil and is made up of many turns of wire. These coils are shown schematically in Fig. 2.

It is clear from the types of coils employed that one (current coil) is of low inductance while the other (potential) coil is highly inductive; and moreover, that the current flowing thru the current coil is in phase with the current of the load that is to be metered; while the current flowing thru the potential coil, which is connected across the circuit, is almost ninety degrees out of phase with the circuit voltage, and proportional to that voltage. The two coils in relation to the aluminum disc are illustrated diagrammatically in Fig. 3.

We have already learned, from our study of wattmeters, that two coils, connected and built as the current and potential coils are, will set up a rotating magnetic field. Now, at the time the field is established,

eddy currents are set up in the aluminum disc. The reaction between these eddy currents thus established in the disc (which is the "rotor" of this "motor" part of the meter) develops a torque which imparts a turning moment to the mechanism. Now, there is one more step that must be accomplished in order for the meter to properly register.

We stated awhile ago that the two coils' net effect was almost ninety degrees out of phase one with the other. This relationship must be kept at exactly ninety degrees. To accomplish this, a third coil is wound about the core or pole of the potential coil and shorted thru a resistance of suitable size and design. This coil is sometimes called the "power factor adjustment" and sometimes referred to as the "lag coil." Without going into a greatly detailed technical discussion, for most power factors encountered in commercial and industrial conditions, the torque developed in the meter will be proportional to the power factor of the metered circuit.

So much for the "motor" part of the meter. Awhile ago we spoke of one of the components of the meter designated "a retarding device." This retarding device, in most meters today, is a permanent magnet. The general shape of the magnet is shown in Fig. 4.

The magnet is mounted so that it can be shifted with respect to the disc. This magnet acts as a load for the "motor" (and thus retards the rotation of the "motor", which is done by the magnetic lines of force, whence its name). This retardation is necessary in order to make the speed of the motor proportional to the torque. For, of course, the speed of the disc has to be proportional to the torque for the meter to register properly.

The register, or indicating device, of the meter is nothing more than a revolution counting mechanism calibrated to read in kilowatt-hours. The register is driven from the shaft of the aluminum disc thru a gear train.

A suitable case and cover is provided together with appropriate terminals for connection to the circuit.

That's all there is to the watt-hour meter: Simple, well-designed,

accurate as a fine watch and, with all its finely-adjusted and delicate parts, still a rugged device.

Demand Meter

Now for a discussion of demand meters. You will remember from our article on "Kilowatts and Kilowatt-hours" that "demand" or "requirement" was defined as the amount of energy required during a certain period of time. For example: 2 kwh per hour which, when expressed in a mathematical equation, becomes $2 \text{ kwh} \div \text{h}$. The H's cancel out, and the quantity becomes 2 kw.

Thus a demand meter is a device, employed to indicate or record the rate at which energy is consumed. It is virtually a wattmeter designed to show power with respect to time. Commercially, demand meters are designed and built to operate on time intervals of 15 and 30 minutes, although there are some that operate on an instantaneous basis or such short intervals as 5 minutes.

Here is how the demand meter works: It is always used in conjunction with a watt-hour meter; either as an integral part of the watt-hour meter, an attachment thereto, or as an auxiliary device operated by the watt-hour meter thru a suitable relay mechanism.

Basically, the demand meter consists of nothing more than an indicator that is moved over a calibrated scale by a pusher device. This pusher device is geared either directly or indirectly to the watt-

hour meter so that the pusher moves at a speed proportional to the speed of the rotating disc of the watt-hour meter. That, it may be seen, provides the rate at which energy is consumed since the speed of the disc of the watt-hour meter is proportional to the energy being drawn thru the watt-hour meter.

All that remains, then, is to provide for a time interval. This is accomplished by a small synchronous motor (just like the one used to operate an electric clock; for, actually, that is all it is: a clock—to tell the pusher how long to push). The clock mechanism allows the pusher to return to zero at the end of each interval of time for which the clock is set. For example, if the demand interval is 30 minutes, the pusher resets or returns to zero every thirty minutes while the indicator or pointer remains at its highest point of travel. The pointer is reset to zero, whenever desired, by hand.

Recording demand meters are nothing more than elaborated versions of the simple type just described. Instead of a scale and pointer, a chart and stylus, or a chart and pen, are used. But the operating principle is the same.

The demand meter, like the watt-hour meter, is simple, accurate and relatively rugged in construction. Both meters are indispensable to the use and application of electric power and electric energy; for they tell accurately and completely when and where and how electricity in your plant is being consumed.

Fuel Savings in Atlanta Laundry

(Starts on page 70)

sistently clean combustion obtained with the air atomizing burner over a wide range of operating loads from 30 to 100 per cent, have provided convincing proof of the flexibility of the burner.

Conversion

For conversion to gas, the oil nozzle assembly is simply removed and a dummy head substituted to seal the gas plenum. Flipping the burner control switch from "Oil" to "Gas" then cuts off the mechanism and permits the controlled

flow of gas to the burner. The entire changeover is simple and easy, requiring about four minutes.

Mr. B. R. Cohen, President of Apex Linen Service, reports a considerable fuel saving with the Voriflow burner. This saving is due largely to the ability of the new burner to burn gas at very low pressures. Formerly, low gas pressure required switching to higher cost oil. So far, Mr. Cohen states, the necessity for changeover to oil in cold weather has been reduced more than 75 per cent.

Electrical System in Solvent Area

An indoor pilot-plant solvent area comprising 4 oilseed processing units is serviced entirely with Class 1, Group D Fixtures.

By Kenneth M. Decossas, Henri J. Malaison, Frederick A. Deckbar, Jr., and Hermann L. Asset

Southern Regional Research Laboratory, New Orleans, Louisiana

WITH the objective of safety, an indoor pilot-plant solvent area of 5,000 sq ft at the Southern Regional Research Laboratory is serviced entirely with Class 1, Group D fixtures. The four oilseed processing pilot plants located in the area are a continuous solvent

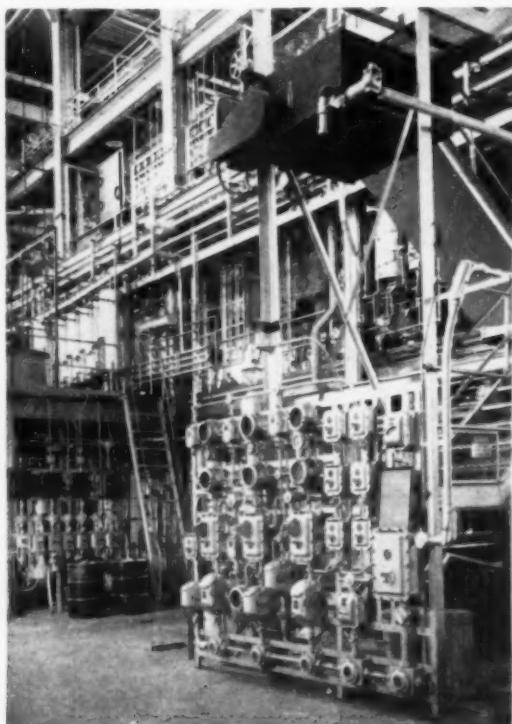
extraction plant; a continuous solvent crystallization plant; an oil and solvent recovery plant; and a cottonseed fractionation plant.

Lighting Requirements

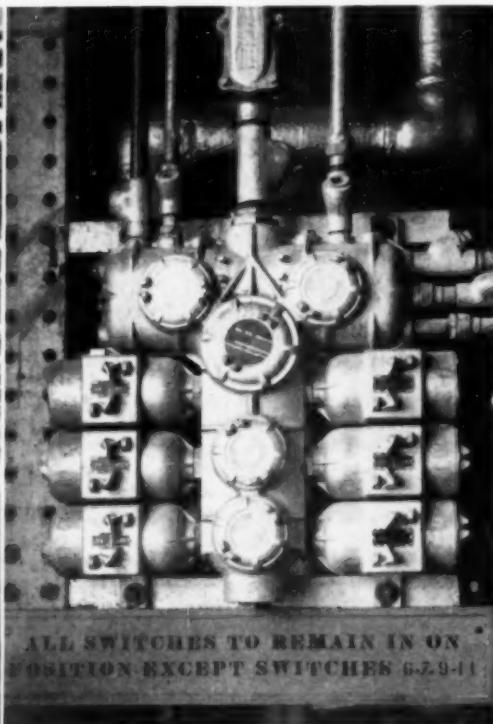
A single-phase, 120-volt, 60-

cycle lighting circuit carries current through a multibreaker board to fifty-five 200-watt lamps and twenty-two 30-ampere receptacles or 77 single-phase units.

To make possible the immediate cut-off of supply of electrical power to the 4 plants, an emer-



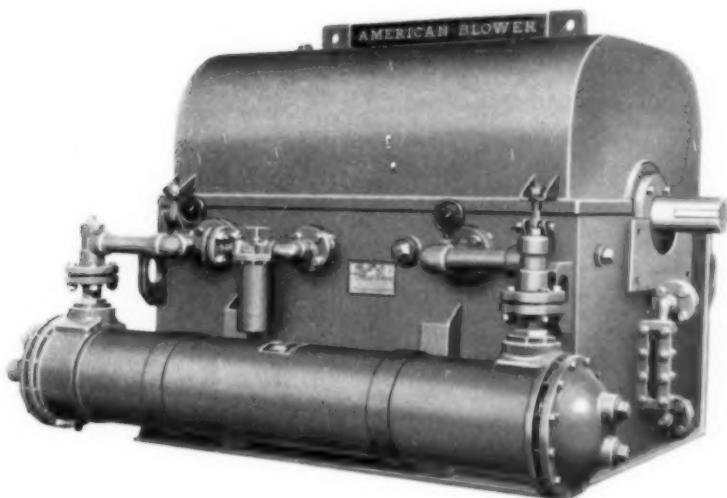
Left—A general view of the solvent area. At the basement level, in the foreground, is the control bank for the continuous solvent crystallization plant; and behind the two drums is the control bank for the continuous cottonseed fractionation plant. At the first and second balcony elevations, almost midway across the picture, are the three control banks for the con-



tinuous solvent extraction plant. At the second and third balcony elevations, upper left in the picture, are two exhaust fans.

The view at right shows the multibreaker board for single-phase, 120-volt, 60-cycle lighting circuit.

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You'll save power, eliminate starting shocks, get stable control over the entire range with American Blower Gyrol Fluid Drives on your forced and induced draft fans. It's the best means we know of to get stepless control from approximately 98% motor speed down to 20% with a simple constant speed driving motor.

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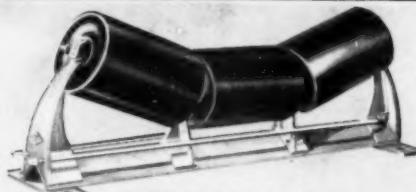
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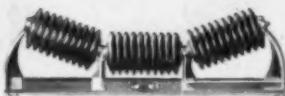
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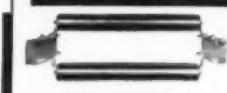
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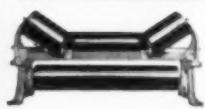
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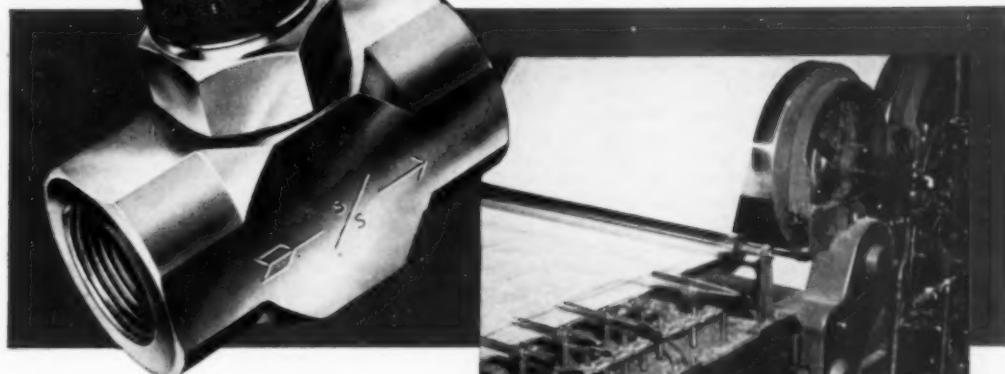


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by slashing heat-up time

A South Carolina mill reports (after equipping a slasher with Yarway Impulse Steam Traps) . . . "For the first time we are actually getting production . . . due to slasher heating up faster on the start and at 'doff' periods."

This same mill also reports *even temperatures* on their dry cans — only 2° or 3° variance — compared to as much as 15° with the old-type traps. They are now standardizing on Yarway Impulse Traps.

Cases of increased production are common where Yarway Impulse Steam Traps are used. They are designed to insure sending maximum premium B.T.U.'s at top temperatures into your process or product . . . to get equipment hotter, sooner and keep it hot.

Enjoy these benefits, and others like *easy installation, reduced maintenance and low cost*, by trying Yarway traps in your plant. Stocked and sold by 216 Industrial Distributors. Trained Yarway men also are quickly available to help on your trap problems.



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Southern Representative: ROGER A. MARTIN, Bona Allen Building, Atlanta 3, Ga.

gency cut-out system has been installed. Either one of two small tumbler switches, which are located apart from each other and are remote from the solvent area, may be thrown to terminate all electrical supply in the area, with the exception of the fan and the lighting circuits. These switches operate through a connection with the solenoid circuit of a large magnetic switch located in each of the 4 circuits between the main control breakers and the control bank breakers.

The 4 exhaust fans, one at each of the elevations, replace the air in the Industrial Wing every 7 minutes and in the solvent area more frequently. This regular renewal of the air in the solvent area keeps the hexane concentration below the lower limit for an explosive mixture. In case of fire or explosion, the fans are cut off by means of automatic thermal controls when the air temperature reaches 120 F, so preventing the spread of the flames.

The exhaust fans are on a separate circuit connected directly to the 2500-ampere supply bus, because air circulation is often desirable when the other services are cut off.

A gas alarm with feelers located strategically at 8 points throughout the area gives warning of an explosive mixture in the atmosphere.

Flexibility and Instrumentation

A 34 ft difference in elevation between the basement and the third balcony prompted control of some of the circuits at two levels. In these cases, push button stations and magnetic starters are connected in parallel.

A double-throw switch was installed in parallel with the start button of the magnetic starting switch to permit control, either manually or automatically, of the liquid level in the vapor scrubber downstream from the dryers in the continuous solvent extraction plant.

In the continuous solvent extraction plant, ammeters in Class I, Group D cases were introduced into the drive circuits of closed pipe conveyor systems, where the meal is likely to pack and cause

mechanical or electrical overload. An indication of any undue gain in current warns the operator of approaching packing of meal.

A fully automatic ammonia system has been obtained in the continuous solvent crystallization plant by installing automatic pressure, vacuum, and thermostatic controls combined with relays, solenoid valves, and magnetic starters.

All plug receptacles for use with portable equipment are of the delayed action, explosion-proof type, so constructed that the plug cannot be removed while electrical contact is in effect. In addition, local tumbler switches installed on the supply side enable cutting off the receptacles from the supply for insertion of plugs, to prevent arcing.

Throughout the installation, the requirements of the National Electrical Code were met and in some instances exceeded. For example, whereas paragraph 2202 of the National Electrical Code allows a 3 per cent voltage drop to the final distribution point for power loads, voltage drop here was maintained less than 1 per cent throughout.

The overall cost of the 3-phase circuits was \$17,160, of which \$8,190 was for combined mechanical services and laboratory design time and \$8,970 for contract work and materials. The average cost per 3-phase horsepower was therefore \$140 excluding motor cost. Excluding \$4,270 design cost, the average cost per 3-phase horsepower was \$105.

Boiler Plant at Alabama Tech

(Starts on page 71)

second boiler early in 1950. A boiler that had served a portion of the campus for 45 years was condemned, and it was necessary to install the third 300 hp boiler late in 1950.

During the earlier period of the expansion program the requirements for steam ran ahead of the boiler capacity. As a result of the rapidly mounting steam load, the first of the new boilers was operated at 225 per cent greater rating than originally intended. The emergency operation demonstrated that this type of boiler and stoker were

On the basis of the installation in the continuous solvent crystallization plant, which has more large-size motors than the other three plants, and excluding costs of charges necessitated by process development and laboratory design costs, 60.17 hp was installed at a cost of \$2,978.30 or \$49.50 per hp.

Prevailing wage rates for this installation were \$2.40 per hour for electricians and \$1.20 per hour for electrician's helpers.

The overall cost of the single-phase system was \$5,070, of which \$2,630 was for combined mechanical services and laboratory design time and \$2,440 for contract work and materials. The average cost per single-phase fixture was \$66 including the fixtures. Excluding the cost for design personnel, calculated to be \$1,950, the average cost per single-phase fixture was \$41.

It should be realized that the unit horsepower costs for the pilot-plant electrical installation were higher than they would have been for a similar system servicing commercial-scale motors. Thirty-six of the fifty-nine motors serviced in this pilot-plant system are fractional horsepower; yet starter cases and conduit are as large and as expensive as for larger-size motors. Also, an especially large amount of control instrumentation is required in experimental engineering. Many similar factors may enter into the costs of pilot-plant electrical layouts which would not be encountered in commercial installations.

very well suited for quick changes in conditions requiring operation under overload conditions. Operators found particularly that the pneumatic spreader stoker permitted quick "light offs" and that a unit could be quickly "killed" with minimum waste of fuel.

All three boilers are brickset with refractory furnaces. For the type of service it was considered desirable to have the high thermal storage that would be available with the refractory furnaces. Operation is regulated by a complete set of combustion controls.



SPECIALLY DESIGNED 500 GPM WORTHINGTON TREATING SYSTEM at the new Pemex natural gas refinery in Poza Rica, Mexico. System includes cold-process slurry-type softener followed by acid feed, filtration and zeolite treatment. Engineered by Arthur G. McKee Company.

Specially Designed for Intermittent Service

*Softening system for boiler feed water built for
short-period operation, long shutdowns*

Water conditioning requirements are especially tough at the new Pemex natural gas refinery in Poza Rica, Mexico.

Their need for variable-rate, continuous-service softener operation is complicated by the intermittent boiler feed-water storage demands.

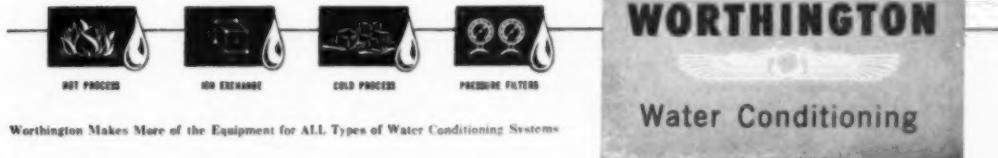
Pemex's conditioning requirements have been met by a specially built Worthington system, so designed that the slurry bed is not lost during "off-service" periods. The bed resumes its normal suspended position at the instant service is resumed. This avoids the irregular treatment, delay and water waste common in systems that require

creation of a new slurry bed after each shutdown period.

New Bulletin W-212-B5 gives you the vital facts about this unique cold process water softening method. Write for your free copy today.

Worthington engineers and builds equipment for all the major types of water-conditioning systems, therefore is in an excellent position to give comprehensive and well-balanced recommendations on your water-conditioning equipment problems . . . further proof that *there's more worth in Worthington*. Worthington Corporation, Water Treating Section, Harrison, N. J.

J1.3





HELPING the MAN-IN-THE-PLANT

ideas . . . tools . . . methods . . . devices

Time- and Work-saving Hints and Kinks

A WELL directed stream from a carbon dioxide fire extinguisher serves as well as compressed air for cleaning when the air is not available. Quickly absorbed into the atmosphere, it leaves the surface clean and is harmless to paint and equipment. Care should be taken to keep the extinguisher at a safe distance from the material to be cleaned due to the high nozzle pressure.

Miniature aviation type lamps now duplicate most regular styles used in power plant panels and have the added advantage of being shock-resistant and long life.

Probably the simplest test for effectiveness of a fuel oil treatment is to take a small sludge sample and add the treatment. Without violent agitation at that time, the fuel oil treatment is ineffective.

Kitchen type exhaust fans provide economical air blowers and circulators for panel boards and small electronic assembly cabinets where heat is a problem.

Sand is an efficient cleaner for chemically stained glassware used in power plant water testing. Filled with sand and water, a glass vessel shaken for a few minutes emerges bright and clean from the most hardened stains and deposits.

New type rugged 2000-hr lamps available in all commercial wattages give additional dividends through less labor and frequency of replacement from their long length of service.

Small compact butane and propane gas torches, the ones with the replaceable "beer can" fuel container, can be easily adapted through a piece of copper tubing for use in lighting oil burners. These small units have a life of about twelve hours and eliminate all smoke and grime from the conventional oil soaked flare.

For small control circuit wiring, plastic tubing is handy for underground leads through acid type soil material. The plastic tubing is held in the air and a fish-sinker lowered with a string which then pulls in the control wires.

Making a compact test assembly for identical electronic equipment saves considerable time and provides a quick means of checking. Instruction books always give voltage and current readings which can be incorporated in a test design on a plug-in connection.

As most control equipment in the power plant is furnished in dual 115/220 v ranges, use of the higher voltage permits smaller diameter wires; more wire circuits in conduits and lowered voltage drop to equipment.

On a recent underground cable installation, three individual single conductors were used instead of a three conductor cable. Use of the single wires saved about 25 per cent of the three-wire cable cost and at the same time provided higher amperage rating.

Trench expense was identical as the three conductors were laid on six inch centers. Additional

benefit is expected in event of cable failure as one conductor can be spliced more quickly and economically than three-wire cable.

Use of draftsman's instrument ink remover is a handy aid in cleaning flow-meter and other control instrument pens. It rapidly softens all ink deposits and leaves the surface clean.—*L. W. Fitzpatrick, Chief Engineer, Department of Corrections, Jefferson City, Missouri.*

KEEP POSTED

Operating Aids For Your Reference File

Boiler Tube Corrosion Problem?—In low pressure boilers, corrosion is the largest single cause for replacement of boiler tubes. Circle item number B-10 on the page 17 reader service coupon post card for a free copy of Babcock & Wilcox Company's article TR-514, which points out the various types and causes of corrosion and offers a number of general rules to follow to get maximum service life for boiler tubing.

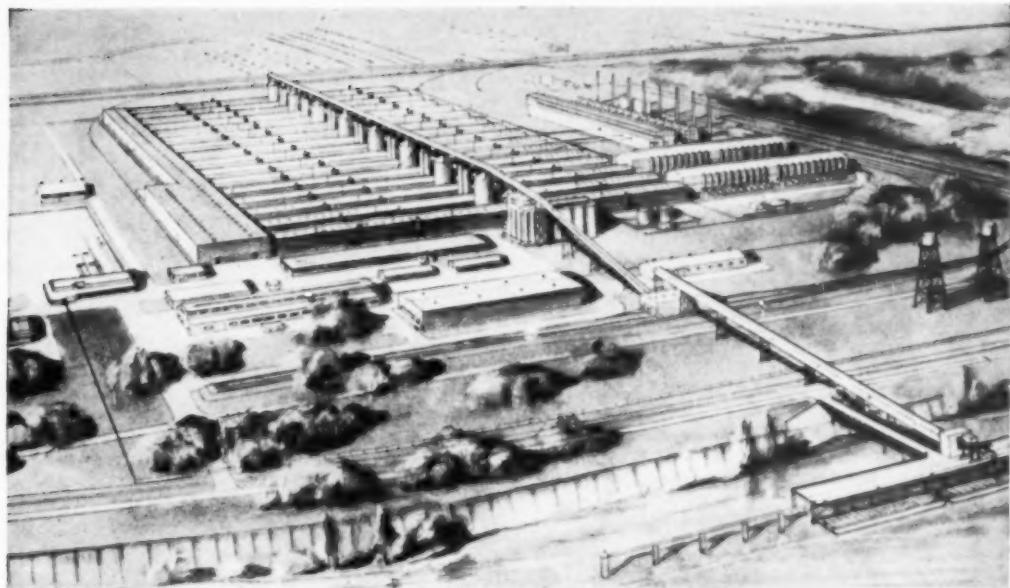
Training Fork Truck Operators?—"How to Operate a Lift Truck," a 24 page booklet published by the Hyster Company, combines a 2-color cartoon technique with a detailed manual approach. Slanted for both the beginner and experienced operator, book gives information on fork truck operation, maintenance, safety and basic materials handling. For your free copy circle item number B-11 on the page 17 reader service coupon post card.

How About Off-The-Ground Maintenance Costs?—Painting and cleaning, electrical work and equipment maintenance, pipe repair and maintenance, and special jobs are discussed in Bulletin G-206 of the Patent Scaffolding Co., Inc. Recommendations are given to plant maintenance men in choosing and applying the most efficient supporting equipment for the job at hand. For your copy circle item number B-12 on page 17.

Bearings Running Hot?—Choice of oil or grease, and everyday problems of ball bearing lubrication and maintenance are discussed in "The Lubrication of Fafnir Ball Bearings" available to you by circling item number B-13.

Too Much Maintenance Paperwork?—Check on Remington Rand's simplified preventive maintenance control for plant and production equipment. Folder KD-705 shows how Kardex provides close control necessary by signaling servicing dates for every piece of machinery in the plant, listing work to be performed and recording dates of accomplishment. For your free copy circle item number B-14 on the page 17 reader service post card.

Water Contamination Difficulties?—Boiler water conditioning catalog of the E. F. Drew & Company, Inc., outlines difficulties caused through industrial water contamination, recommended water conditioning treatments for scale, sludge, corrosion, carryover and other boiler conditions, and efficient control methods. Available for your reference file by circling item number B-15 on the page 17 service card.



KAISER ALUMINUM AND CHEMICAL CORPORATION'S new 400,000,000 pound-a-year, \$150,000,000 aluminum reduction plant at Chalmette, La., designed and built by Kaiser Engineers, is the largest plant of its kind in the U. S. The plant—where production began in December,

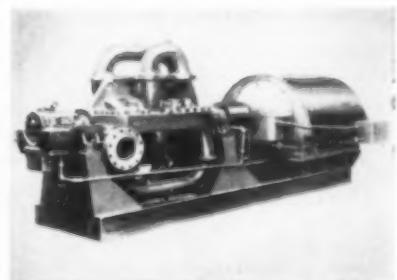
1951—uses 19 Worthington boiler-feed pumps and other Worthington equipment including thirty 9,300 square-foot condensers, and fifteen 250,000 pound-per-hour deaerators, 2 steam turbines and numerous circulating pumps.

Power plant at largest aluminum reduction plant to use Worthington pumps, condensers, deaerators

It takes plenty of electric power to produce 400,000,000 pounds of aluminum in a year. And that's what they're doing at the new Kaiser Aluminum plant at Chalmette, La.—largest aluminum reduction plant in the U. S.

Kaiser joins many other top companies in choosing Worthington boiler-feed pumps as well as other key equipment for their new plant. Such choices arise out of an insistence for equipment that's engineered for maximum performance.

Worthington engineering produces boiler-feed pumps of the most advanced design in the field, made from specially selected metals. Each pump is exactly *right* for the pressure and temperature with which it is to perform. Over 110 years of Worthington experience in building pumping equipment go into making this a certainty. Worthington Corporation, formerly Worthington Pump & Machinery Corporation, Centrifugal Pump Division, Harrison, New Jersey. C.24



19 WORTHINGTON 250,000 LBS PER HR BOILER-FEED PUMPS at new Kaiser plant, handle feedwater at 257°F against a discharge pressure of 1,030 psig. Pumps are axial-balanced, volute type centrifugals. Two, similar to one illustrated, are driven by Worthington 450-hp steam turbines.



For Boiler Feed
Service, capacities
to 1,500 GPM;
Heads to 1,000 feet.

For Hotwell, Con-
denser, Chilled
Water Service.
Capacities to 1,600
GPM, Heads to 650
feet.

For Water Works,
Circulation, Draining,
General Service.
Capacities to 135,000
GPM, Heads to 400
feet.

For Boiler Feed
Service, capacities
to 2,000 GPM;
Heads to 7,000 feet.

The World's Broadest Line Assures You the Right Pump for Every Job

WORTHINGTON

Centrifugal Pumps

FLAME-PLATING . . . A New Technique

Tungsten carbide is deposited in the form of a thin coating that is not diluted by the base metal or welding rod.

SURFACING metal parts with hard materials to protect them from wear is not new. This is being done in many ways—hard-facing, electroplating, fusion-welding and metallizing.

However, Linde Air Products Company, a division of Union Carbide and Carbon Corporation, has announced an interesting technique—Flame-Plating. It is a method of coating metal parts with a very thin layer of extremely hard and high melting point materials. Manufacturer emphasizes that it is the only known method of depositing tungsten carbide in the form of a thin coating that is not diluted by base

metal or welding rod. The hard coating (about 89 on the Rockwell A scale) is quite ductile and has wear resistance far superior to any other plating method.

The temperature does not exceed 400 F. during plating operations. There is no change in mechanical properties of metal being plated and it also reduces to a minimum, chance that the part might warp.

Metals other than tungsten carbide have been deposited, but bulk of research by Linde Air and field tests has been accomplished with tungsten carbide. All steels, cast iron, aluminum, copper, brass, bronze, titanium, and magnesium

When these cotton-picker spindles rotate at about 2000 rpm, the barbs on each conical surface pluck cotton at an amazingly fast rate. Sand in the bolts wears steel barbs down. A 0.001-in. thick Flame-Plated coating protects the barbs from this unusual wear condition. In this application, no grinding or polishing is necessary.



have been coated. Coating can be applied to any metal except polished chrome-plate and tungsten carbide.

FLAME-PLATING DATA

Applications—Those tested under operating conditions include cotton picking spindles, dies, seamining rolls, burnishing tools, thread gauges, arbors, and saw teeth.

Coating—Composition: 92 per cent tungsten carbide—8 per cent cobalt. Hardness: 12,000 to 15,000 Vickers (500 gm. load). Coating Thickness: Maximum—0.020-in.; Minimum—0.0005-in. Surface: 125 microinches rms, as coated, and 2 microinches rms (Brush Analyser) after finishing.

Size Limitations—Round: O.D. from $\frac{1}{8}$ -in. to 6-in. Flat: As coated—6-in. x 40-in. Finish-ground— $\frac{3}{4}$ -in. x 40-in. Shape of base piece: Externally—any area at no greater than 45° from a horizontal datum. Inside cylindrical walls—Coating can be deposited to a depth equal to the diameter of the hole.

Economics—Cost of Flame-Plating a part, in actual dollars and cents, will fall somewhere between the cost of a hard-faced part and a sintered tungsten carbide. A Flame-Plated plug gage will cost more than a gage made of a cast alloy, but less than one made of sintered tungsten carbide. It will, however, be balanced against the service life. Very often the time and money a long-wearing part saves by reducing down-time for maintenance and repair more than offsets its initial cost.

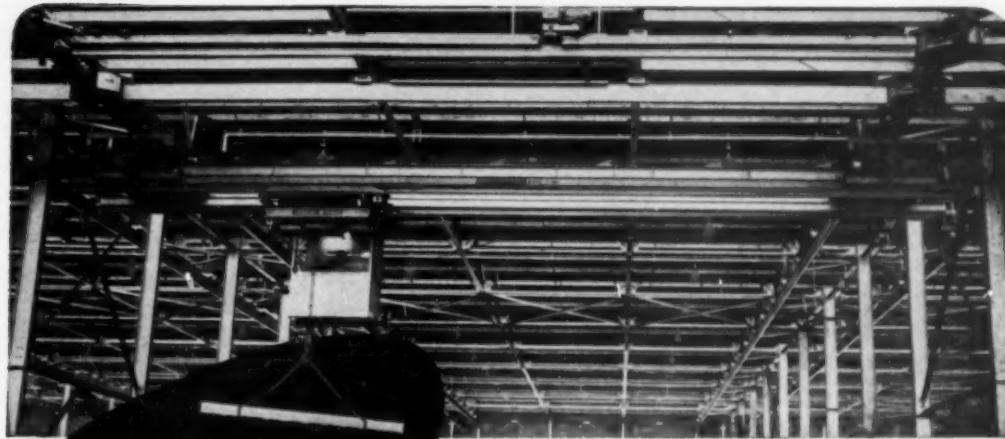
Facilities—The Flame-Plating process was developed in the Speedway Laboratories of Linde Air Products Company, Indianapolis, Indiana, and all operations are performed at this location. Articles are prepared for Flame-Plating by the customer, sent to Speedway for coating, and then returned to the customer. If articles require finish grinding, customer either performs such operations in his own shop or contracts the work to a local shop specializing in precision grinding and lapping.

Cost—In general, small articles carry the highest charges per unit area of tungsten carbide plating and, naturally, charges increase as the thickness of plated deposit increases. Prices range from 70 cents per sq in for 0.01-in. thick tungsten carbide plating on cylindrical articles over $1\frac{1}{2}$ -in. in diameter, to \$10 per sq in for 0.01-in. thick deposit on cylindrical articles $\frac{1}{2}$ -in. in diameter. Charges for plane areas fall within these limits.

Production Kept Going While Roof Was Raised

THE Rosemary Manufacturing Company of Roanoke Rapids, North Carolina, was faced with the problem of removing and replacing the roof and supporting columns in one of its weave rooms without interrupting production. It was believed that one of the most difficult problems to be overcome was that of providing for an uninterrupted power supply since the electric lines were the old open knob and cleat type fastened to the roof beams.

Some thought was given to the possibility of stringing up temporary lines and supporting them from the gantries on which the jacquard machines were mounted. However, this plan had two serious disadvantages. Since it was not considered safe to use the old wir-

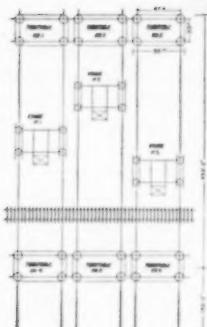


A CRANE that TURNS the CORNERS!

Imagine a crane that shifts from its craneway to another via 90° turntable—then shifts again at 90° to travel another craneway. It's like driving a car to the middle of an intersection, then instead of just the front wheels turning, all wheels turn at a right angle and the car travels sideways down the side street.

This crane offers fast hoist hook service throughout maximum areas without load transfer from original pick-up.

An American MonoRail engineer will gladly tell you now about its application.



THE AMERICAN

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CLEVELAND 7, OHIO

SOUTHERN POWER & INDUSTRY for NOVEMBER, 1952

helping the man-in-the-plant (continued)

ing, it would have been necessary to buy new material for the temporary lines, very little of which would have been usable in the final, permanent installation. There would also have been a great amount of duplication of labor involved. Finally, Mr. D. P. Tilar, who was plant engineer at that time, and Mr. J. W. Sanders, chief electrician, hit upon an idea which

solved the problem and provided for an uninterrupted power supply without either of these disadvantages.

A complete distribution system of Bulldog Plug-In Bustribution Duct was purchased and installed temporarily. This consisted of three 600 amp mains and nine 200 amp feeder ducts. The mains were installed along the east wall and

the feeders were run across the room at various points. These feeders were mounted on wooden supports which were in turn nailed to the gantry timbers above the looms. While the roof was being removed and replaced, this system provided a safe, temporary means of power distribution. After the new roof was completed, the bus duct was raised to its final position, fastened permanently to the roof beams, and permanent branch lines were connected to the individual looms.—J. B. Gurley.

Automatic vs. Hand Nailing

Plant test shows production ratio of 4 to 1 in favor of machine.

Hand nailed shooks — 20 min. each — automatic nailing 5.17 min.

ACCORDING to tests, reported by A. G. Mack Wynn, production vice-president of the Auto-Nailer Company of Atlanta, Georgia, an automatic nailing machine can increase output more than 300 per cent in making shooks (set of parts of boxes, tops, bottoms, sides and ends ready to be assembled), or in plants where output is satisfactory, one man can do the work of three or four.

The man vs. machine contest was staged in a time-methods study to determine the exact extent to which automatic nailing of shooks sur-

passed old hand nailing methods.

Norman Reid, who regularly uses an Auto-Nailer to turn out the company's own wooden shipping containers, was pitted against Columbus Oliver, the plant's fastest man with a hammer.

In an hour's run, Reid had piled up 11.6 shook assemblies with the Auto-Nailer while Oliver was putting together only 2.9 assemblies by hand. Assemblies consisted of a bottom skid, top, two sides, front and back.

The automatically nailed shooks were clocked at 5.17 min. per as-

sembly, while 20.60 min. were required for each hand-nailed assembly—a production ratio of 4 to 1 in favor of the machine. Machine produced the skid part alone in only 45 seconds, compared with over 4 minutes of hand nailing.

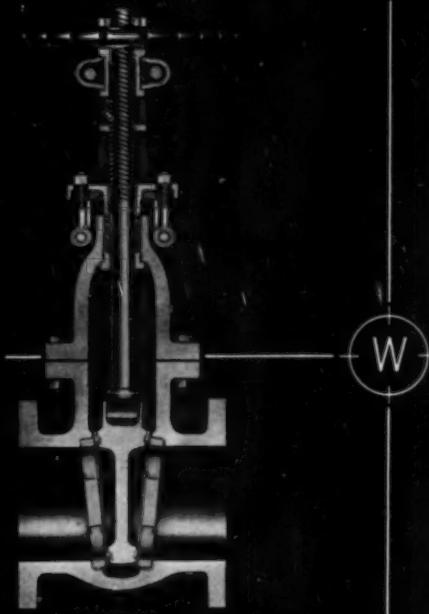
In the time-methods study on shooks, the skid was $\frac{3}{4}$ in. pine nailed onto $1\frac{3}{4}$ in., while the remaining pieces were $\frac{1}{8}$ in. plywood nailed onto $\frac{3}{4}$ in. pine cleats. Top and skid measured $17\frac{1}{2} \times 21\frac{1}{4}$ in., the other members measured $21\frac{1}{4} \times 67$ in.

No jigs were necessary for the machine which nailed as fast as it could be fed. Nail length was controlled by a dial selector, and not only did it cut and drive at one motion, but also countersunk and clinched at the same time. There were no bent or dropped nails, or split wood, and knots were taken in stride.



One hour production by hammer and nails vs. one hour production by the Auto-Nailer. The Auto-Nailer produced 4 times as many shooks as did the man with the hammer.

The automatic nailing machine will handle all types of wood, light metal, and plastic nailing operations. One foot operation cuts and drives nail from a coil of knurled nailing wire. If pedal is held down, machine cuts and drives at the rate of three nails per second—clinching, or bradding as it goes and driving either flush or countersunk. Control knob makes the nail the exact length wanted for the job at hand.



IRON

COMPLETE LINES OF IRON VALVES AND PIPE FITTINGS are manufactured by Walworth in a variety of types, pressure ratings, sizes, and patterns for general industrial use.

Walworth also manufactures complete lines of valves (including Lubricated Plug Valves), and pipe fittings made of steel, bronze, and special alloys.

These valves and pipe fittings, plus Walworth-made pipe wrenches total approximately 50,000 items and are sold through distributors in principal centers throughout the world.

Walworth engineers will be glad to help you with your problems. For further information call your local distributor, nearest Walworth sales office, or write to Walworth Company, General Offices, 60 East 42nd Street, New York 17, New York.



Iron valves in gate, globe, angle, check, and lubricated plug types are manufactured by Walworth. Illustrated is a sectional view of a Walworth No. 726F Standard Iron Body, Bronze Mounted, Wedge Gate Valve with flanged ends. This line of valves is available in sizes 2 to 30 inches. Similar valves of All-Iron type are also available.

WALWORTH

Manufacturers since 1848

valves . . . pipe fittings . . . pipe wrenches

60 East 42nd Street, New York 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

helping the man-in-the-plant (continued)

\$\$ for your ideas—see page 90

Homemade Reel Handles Stoker Grates

ONE of the more frequent and back breaking maintenance jobs which fall to the lot of stoker fired steam plant operators is the replacement of burned out and cracked grates. After spending several hours changing grates on weekends, which hours could have been more profitably (for the company) and more pleasantly (for the individual) spent fishing, the steam plant Foreman of a North Carolina finishing plant applied his ingenuity and fishing talents to the problem, with the result shown in the accompanying photographs.

This device consists of a saw-horse like frame, the top member being a shaft with a hand crank, mounted in pillow blocks. A $3\frac{1}{8}$ in. steel cable, with hooks at each end, is clamped to the shaft. The hooks

are caught on the flanges of a row of grates and the grate section is hoisted clear by winding the cable

on the shaft. Lowering of the new grates is accomplished similarly. The reduction in man hours, mashed fingers, agitated tempers, and strained backs normal to such a job compensates for the slight cost of construction many times over.

The particular hoist illustrated was made for a Detroit power dump spreader stoker. — W. H. Fisher.



Flexible Valve Shield Protects Operators

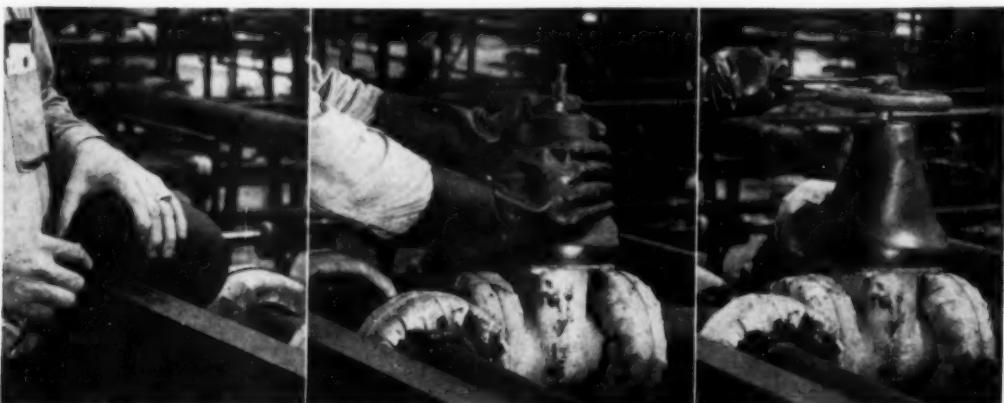
SAFETY engineers in one of du Pont's chemical plants came up with this idea of a flexible valve shield to prevent acid from spray-

ing on operators if the valve packing failed. Several hundred of the shields were made in their own shop for their own use. They were

hand-made and fairly expensive. When they were satisfied with its merits they turned the idea over to *Industrial Products Company* of Philadelphia for commercial development.

The new flexible valve shield made of neoprene synthetic rubber

Operator cuts hole in bottom of shield to fit over valve stem, pulls shield over valve and replaces hand wheel.



KEWANEE and IRON FIREMAN

- For oil, for gas, or oil and gas firing
- For every commercial and industrial application



Jointly announce a NEW boiler-burner UNIT

Two outstanding companies in their respective fields—Iron Fireman and Kewanee—have combined their engineering talents and their long experience in designing and producing this unique new boiler-burner unit.

Every part has been skillfully engineered for balanced operation to give users what they want; efficient utilization of fuels, with resulting low-cost steam; and fully automatic, dependable performance.

The burner, including all controls, built-in forced draft fan and oil pre-heating system, is completely assembled, wired, tested and shipped to the installation site from Iron Fireman. The boiler, completely assembled with all of its essential elements, is shipped from Kewanee. Matching connections are provided for quick, easy installation.

Available for high pressure steam in sizes with outputs ranging from 52 to 456 h.p., 125 and 150 lb. working pressure, and also from 5470 EDR 15 lb. steam or 30 lb.

water. These units may be automatically fired with No. 6 or lighter fuel oils, gas (either high pressure or as low as 2 oz.) or a combination of both fuels.

Send for this 14-page catalog

This catalog, produced in full color, gives COMPLETE information on all sizes and models, including detailed specifications.

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Company _____

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IRON FIREMAN MFG. CO.

3104 West 106 Street, Cleveland 11, Ohio

KEWANEE-ROSS CORPORATION

117 Franklin Street, Kewanee, Illinois

helping the man-in-the-plant (continued)

is for use on valves handling acids and other hazardous chemicals. Shield cups the stem and the packing gland and prevents acid from spraying on the operator or nearby workers. It is molded in the shape of a flower pot.

The "Chex-Spray" valve shield is molded in the shape of a flower pot. To install it, a hole of slightly smaller diameter than the valve

stem is cut or punched in the bottom (see installational views below). The valve wheel is removed and the shield pulled down over the stem so that it covers the packing gland. It doesn't have to be wired in place and can be installed while the valve is in service. Where necessary, the edge of the skirt can be trimmed to suit the contour of the valve body.

\$\$\$ FOR YOUR IDEAS

Send your ideas, methods and short-cuts to *Southern Power & Industry*. Payment is made for suitable material — a photo or rough sketch will make your idea more valuable. Articles from maintenance and production men in Southern and Southwestern plants are preferred. Material must not have appeared elsewhere nor been sent to another publication.

Southern Power & Industry
806 Peachtree St., N. E.
Atlanta 5, Georgia

No Basement—Few Windows—Low Maintenance

THE economy involved in handling fuel by water and the large demand for cooling water make the building of a power plant on a water site almost a certainty. The Higgins Plant built at the head of Tampa Bay in 1950 and 1951 by the Florida Power Corporation is no exception.

A structure of this kind located on a site near salt water presents a large maintenance problem. Hurricanes have always been a major threat to the plants located in this area. Therefore, much thought was given to these problems when this structure was built.

Consequently the lowest eleva-

tion of the plant is 3 feet above the highest known tide. To fore-stall damage of equipment and injury to personnel from high winds, rain, or flying glass, the entire main 8-story structure is built without windows — only the plant office and shop are provided with windows. Glass blocks are installed in the wall to provide light in the stair well and other points. Louvers near the bottom of the north and south walls provide the necessary air intakes.

The walls of the structure are constructed of "Speedwall Tile." A dull rather than highly glazed tile was used to reduce glare. All out-

side walls have an interior drain to keep water from coming through. This tile construction of all walls and the absence of almost all window sash greatly reduces the need of painting; only access doors, sash around the office windows and louvers must be painted and maintained. This saving alone will amount to thousands of dollars per year.

To further reduce upkeep and cleaning costs, tile floors were installed. These floors never require painting and are very easily cleaned with soap and water.

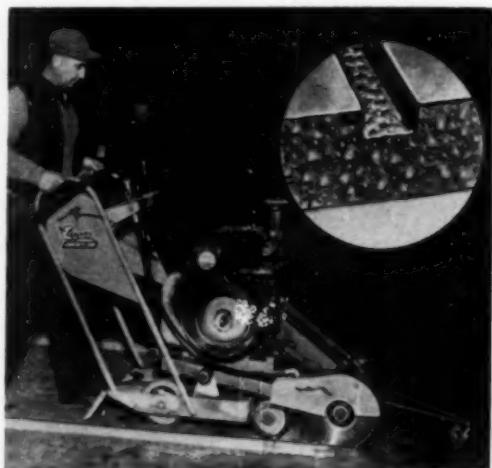
It can be readily seen that this type of construction will save many thousands of dollars in maintenance over a period of years and also, there is less chance of losing the plant during a storm.—A. T. Nelson.

Sawing Concrete

THE Hargett Construction Company sawed nearly 600 lineal feet of concrete to a depth of 3½" during the installation of new rail chases and pipe lines at the General Electric Bulb Plant in Lexington, Kentucky.

The newly developed method of sawing concrete before breaking is now being employed by plant maintenance crews throughout the country. This "sawing before breaking" method saves both time and material in cutting trenches, patches, and machinery bases in concrete or asphalt plant floors. With the concrete saws, furnished by Clipper Mfg. Co., trenches for rail chases, sewer lines, utility lines, air lines, or conduit can be sawed with ease and economy.

Clipper Concrete Saw being used to saw narrow rail chases at General Electric Plant in Lexington, Kentucky.



Specify

BOILER FEED PUMPS

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Pacific

for small and medium sized boiler plants

to insure

RELIABILITY... DURABILITY...
RESISTANCE TO CORROSION-EROSION
DEPENDABLE PERFORMANCE AND THE HIGHEST
FACTOR OF AVAILABILITY AT ALL TIMES

THE Pacific

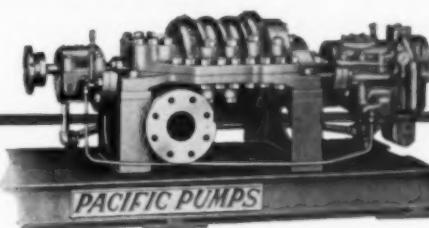
MULTI STAGE TYPE JBF

Capacities To — 1000 GPM

Discharge Pressures To — 1000 psi

Electric Motor Drive To 3600 RPM

Steam Turbine Drive To 5000 RPM



THE Pacific

SINGLE STAGE-UNITIZED STEAM TURBOPUMP

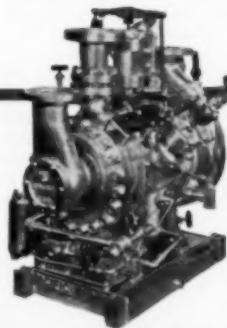
Capacities To — 500 GPM

Discharge Pressures to 1100 psi

STEAM To 900 psi Pressure — 850° F. TT

Exhaust Pressures To — 50 psi

Speeds To — 10,000 RPM.



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NEWS for the South and Southwest

Michael F. Wiedl, Jr., Joins Adv. Dept. of Atlantic Steel

MICHAEL F. WIEDL, JR., has joined the advertising department of the ATLANTIC STEEL COMPANY, Atlanta, Georgia, according to HOWARD B. JOHNSON, company vice-president.

Mr. Wiedl is widely known throughout the South in the metalworking field. He has been keenly interested in the development of metalworking in the South and for several years headed the Southern Machinery and Metals Exposition. He has written extensively for various business papers serving the metalworking industries.

A graduate of the University of Notre Dame, Mr. Wiedl has had diverse industrial experience with the Saginaw Steering Gear Division of General Motors, process laboratories division of Bell Aircraft Corporation, and since 1949, with Atlantic Steel. He served the company in sales development work and was an original



Michael F. Wiedl, Jr.

member of the product engineering department. He later was named safety promotion and co-ordination director for the company.

Mr. Wiedl has been secretary for several years of the Georgia Chapter of the American Society for Metals and is at present District Governor of District 14, Toastmasters, International.

Acme Brick & Abco Furnace Division Occupy New Office Building in Fort Worth, Texas

The ACME BRICK COMPANY, manufacturers of a complete line of fire



Partial view of the new offices of Acme Brick Company in Fort Worth, Texas. Structure is four stories high, with a 60 ft frontage and 95 ft depth. Architects

brick and other refractory products and acid resistant brick and chimney building materials for industrial purposes, has occupied their new office building at 2821 West Seventh St., Fort Worth, Texas.

The new Acme building also houses offices of the ABCO FURNACE DIVISION of Acme Brick, which specializes in bark burners. MR. GEORGE PULS is Vice President of the company; GIBBS SLAUGHTER, Chief Engineer of the Abco Furnace Division; and I. E. CUSHING, Design Engineer.

The new building, of all-masonry construction, provides 22,800 sq ft of functionally-planned, air-conditioned office space. Design features include an assembly room seating 100, a modern snack bar and parking space for approximately 50 automobiles.

were Preston M. Geren, Joseph R. Pelich and W. G. Clarkson & Co., Fort Worth, Texas. Contractor was James T. Taylor & Son, Inc., Fort Worth, Texas.

FUTURE EVENTS Of Engineering Interest

NATIONAL GASOLINE ASSOCIATION OF AMERICA, Wm. F. Low, Secy., 422 Kennedy Bldg., Tulsa 2, Oklahoma.
Nov. 21, Regional Meeting, Herring Hotel, Amarillo, Texas.
Feb. 27, 1953, Regional Meeting, Schaarauer Hotel, Midland, Texas.
Apr. 29-May 1, 1953, 32nd Annual Convention, Rice Hotel, Houston, Texas.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, C. E. Davies, Secy., 29 West 29th St., New York 10, N. Y.
Nov. 30-Dec. 5, Annual Meeting, Statler Hotel, New York, N. Y.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Charles F. Roth, Mgr. Publicity Dept., 20th National Power Show, Grand Central Palace, New York 17, N. Y.
Dec. 1-6, Twentieth National Exposition of Power & Mechanical Engineering, Grand Central Palace, New York, N. Y.

PLANT MAINTENANCE CONFERENCE, Clapp & Poliak, Inc., 41 Madison Ave., New York 17, N. Y.
Jan. 19-22, 1953, Plant Maintenance Conference and Plant Maintenance Show, Public Auditorium, Cleveland, Ohio.

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, Charles F. Roth, Mgr., International Exposition Company, Grand Central Palace, New York 17, N. Y.
Jan. 26-30, 1953, 11th International Heating & Ventilating Exposition, International Amphitheatre, New York, N. Y.

Sterling Distributors— Texas, Alabama, Maryland

STERLING ELECTRIC MOTORS, INC., has recently announced appointment of the following additional distributors: SELMA FOUNDRY & MACHINE CO., P. O. Box 662, SELMA, ALABAMA; ROGER BROWN COMPANY, 111 E. Missouri, EL PASO, TEXAS; and HERR ELECTRIC COMPANY, 410 W. Conway Street, BALTIMORE 30, MARYLAND.

Plant Maintenance Conference Scheduled for January 1953

Sixty-six separate sessions on maintenance problems have been scheduled for the PLANT MAINTENANCE CONFERENCE, which will be held at the Public Auditorium, Cleveland, Ohio, Jan. 19-22, 1953. The sessions will take place concurrently with the PLANT MAINTENANCE SHOW.

Industries included in the discussions will be chemical, food, automotive, foundry, paper, oil, printing, rubber, steel and textiles. Both large and small plants will be studied.

Advance registration cards and hotel information may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.



**New Low-Temperature RCA Victor
Test Laboratory Sub-cooled with**



Refrigeration

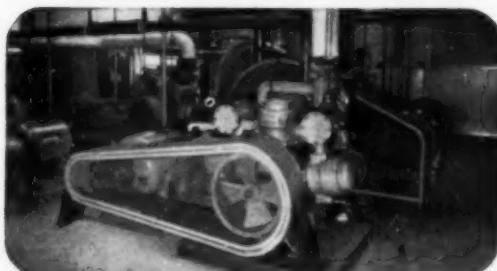
Temperatures down to 85 degrees below zero are maintained by a 3-stage Frick system in this altitude-temperature-humidity chamber of the Radio Corp. of America at Camden, N. J. where two other test rooms are also cooled to minus 100° F. by Frick refrigeration. All built by Tenney Engineering, Inc., with offices at Newark and Baltimore.

For that all-important job of YOURS, whether air conditioning, ice making, quick freezing or other cooling work, specify Frick refrigeration.



Also Builders of Power Farming and Sawmill Machinery

Frick 9-Cylinder "ECLIPSE" Compressors Handling Low Temperatures for RCA Victor.



B-H POWERHOUSE CEMENT

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*reducing heat loss . . .
upping output by NOON*

That's how quickly and easily you can apply this finishing cement which also insulates. Pointing, sealing, applying and finish-trowelling can be done with a single coat and one scaffold setting. Applied over B-H Mono-Block or a refractory or firebrick, it provides effective permanent insulation—a smooth finish which takes both oil- and water-base paints.

Powerhouse, itself, is effective up to 1700° F. and is figured as part of the insulation . . . If you are having trouble holding down heat losses, let us discuss the problem with you. Call on B-H Engineered Insulation Service.

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- POWERHOUSE CEMENT** . . . High adhesion, block rockwool, insulating-finishing cement
- BLANKETS** . . . Metal-reinforced, flexible, felted, block rockwool insulation
- NO. 1 INSULATING CEMENT** . . . All-purpose, rust-inhibiting, plastic cement
- MONO-BLOCK** . . . Rigid, felted block rockwool block—for high and low temperature use



"If it's metal . . . I'll cut it"

A two-hand, portable, on-the-job tool to cut round stock — bolts or rods. Multiplies applied power 80 times — 50 pounds on the handles means approximately 4000 pounds at cutting edge — and cuts easily in one movement and one second of time.

Saves labor, saves time, saves money — in shop or on the job. Sizes to cut from $\frac{1}{4}$ " up to $\frac{3}{4}$ " annealed bolts in thread.

Other models to cut flat stock, bars, wire, stranded wire rope, straps, chain, cable, etc. Made in fine tool quality to stand up in long hard usage. Every Porter Cutter you can use in your plant on repairs, dismantling, servicing or maintenance saves you money — get acquainted with the Porter Cutter line — write for catalog and consult your Industrial Supply House.

50 pounds pressure on the handles delivers approximately 4000 pounds of cutting edge.

PORTER
on the job
CUTTERS

H. K. PORTER, INC.
Somerville 43, Mass.

CUTS



news (continued)

M. C. Forbes Acquires Control of Aquatrol, Inc.

By purchase of a large block of outstanding stock from other interests, M. C. FORBES, president of AQUATROL, INC., HOUSTON, TEXAS, has secured control of the company.



M. C. Forbes, President of Aquatrol, Inc., Houston, Texas, and George M. Keith, Division Engineer, in charge of the company's Gulf Coast Division.

Mr. Forbes has also completed a major reorganization of Aquatrol, Inc., one of the leading firms specializing in industrial water control. The company serves many of the nation's largest refineries, power and manufacturing plants using water for industrial cooling systems, boilers, air-conditioning systems, and for a host of other purposes. Many smaller customers include hotels, laundries, dry-cleaning plants, breweries, bottlers, and manufacturers of all kinds utilizing water in processing their products or operating their plants.



John P. Tognetti, Service Director in the Houston, Texas, office, and R. O. Johnson, Division Engineer in charge of the Mid-Continent Division.

M. C. Forbes continues as president and technical director of Aquatrol, Inc. J. W. BUTLER has been made a vice president; and C. J. D. WADE, comptroller of the company for several years, has been elevated to secretary and treasurer. These officers, with GEORGE M. KEITH and B. B. FORBES, comprise the new board of directors.

George M. Keith has been promoted to division engineer in charge of Aquatrol's Gulf Coast Division.

POWER CONSUMPTION & MAINTENANCE CUT WITH



STERLING SLO-SPEED

OTHER STERLING ELECTRIC POWER DRIVES:

- STERLING SPEED-TROL (VARIABLE SPEED) MOTORS
- STERLING KLOSD AND KLOSD-TITE (NORMAL SPEED) MOTORS
- DRIP-PROOF • SPLASH-PROOF • TOTALLY ENCLOSED

STERLING SLO-SPEED!

The Slo-Speeds that have been installed on our synchronized dual conveyor system and Salem Sander have resulted in reducing tremendously our maintenance costs as well as power consumption through a reduction of horsepower...the conveyor system, originally designed for two motors, is driven satisfactorily by only one Slo-Speed, and a 2 H.P. Slo-Speed replaced a 5 H.P. motor of another make on the sander, reports E. Douglas Johnson of Higgins, Inc., New Orleans.

STERLING SLO-SPEED GIVES YOU THE ONE BEST LOW SPEED AND

gives uninterrupted service—carries heavy overhung loads—provides versatile mounting and flexibility in arrangement of machinery—saves valuable space—provides greater safety—costs less to install and use. An indispensable source of low speed power for:

Agitators	Dryers	Presses
Blenders	Feeders	Pumps
Blowers	Kilns	Screens
Conveyors	Mills	Tumblers
Cookers	Mixers	Etc., etc.



70 ILLUSTRATIONS
showing how Sterling Electric Power Drives reduce production costs. Write for Bulletin No. C-117

STERLING

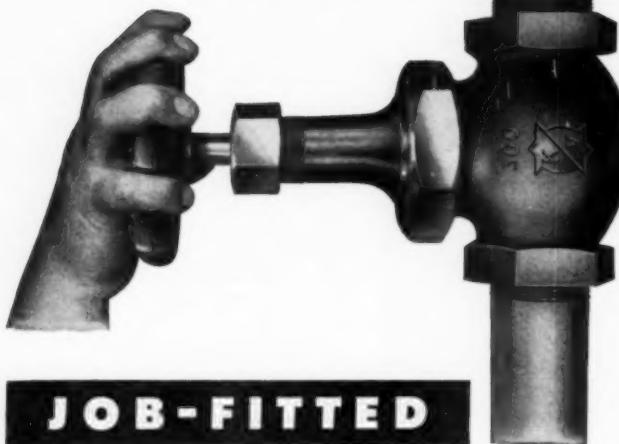
ELECTRIC MOTORS

Plants: New York City 51; Van Wert, Ohio; Los Angeles 22; Hamilton, Canada; Santiago, Chile.

Offices and distributors in all principal cities.

KENNEDY

Fig. 544P



**for longer disc and seat life...
where accurate control is a must**

Like all valves in the complete KENNEDY line these bronze globe valves are JOB-FITTED . . . specially designed and engineered for the job they have to do!

UNION BONNET RING, heavy bronze section with extra thread engagement to assure a tight joint. Union bonnet makes a valve easy to dismantle and reassemble.

STEM, Naval Brass Rod, Acme threads, large diameter with extra thread contact . . . extremely resistant to wear.

PACKING, molded rings of graphited, wire-inserted asbestos designed for high pressure service.

PLUG TYPE DISC, nickel copper alloy, has extra wide seating surfaces for precise throttling control . . . is exceptionally resistant to scouring or wire drawing.

RENEWABLE SEAT RING, nickel copper alloy, ground to match disc in each valve to assure full bearing surfaces over entire contact area of each.

KENNEDY Fig. 544P, plug type disc, and Fig. 544, full-way disc, are designed for 300 lbs. steam, 600 lbs. WOG. Fig. 138P, plug type, and Fig. 138, full-way disc, for 200 lbs. steam, 400 lbs. WOG.

WRITE FOR BULLETIN 108



THE

KENNEDY
VALVE MFG. CO. • ELMIRA, N.Y.

VALVES • PIPE FITTINGS • FIRE HYDRANTS

news (continued)

trol's Gulf Coast Division, which includes the company's Houston, Corpus Christi and New Orleans territories. Mr. Keith was previously Aquatrol's resident engineer of the Houston territory for two years, and before that he held the same position in their Corpus Christi territory for two years.

JOHN P. TOGNETTY joins the company's Houston office as service director in charge of customer technical services. He was formerly with E. W. Saybolt & Company, referee petroleum testers, for three years. Before that he was chief chemist for two years with the Chemical Research Corporation; prior to which he was chief chemist for two years with Gregg-Tex Gasoline Corp.

WILLIAM F. KINDSCHUH has joined Aquatrol as the service engineer of their Corpus Christi territory. He was previously a research technician in the regional laboratory of The Borden Company, at Elgin, Ill.

R. O. JOHNSON, Aquatrol's resident engineer for 2 years in their Corpus Christi territory, has been transferred to Tulsa, Oklahoma, and promoted to division engineer in charge of the Mid-Continent Division, comprising the Oklahoma, West Texas, Kansas, Arkansas and New Mexico territories.

PATRICK E. GRIFFIN has been appointed resident engineer in the Los Angeles territory of Aquatrol's West Coast Division.

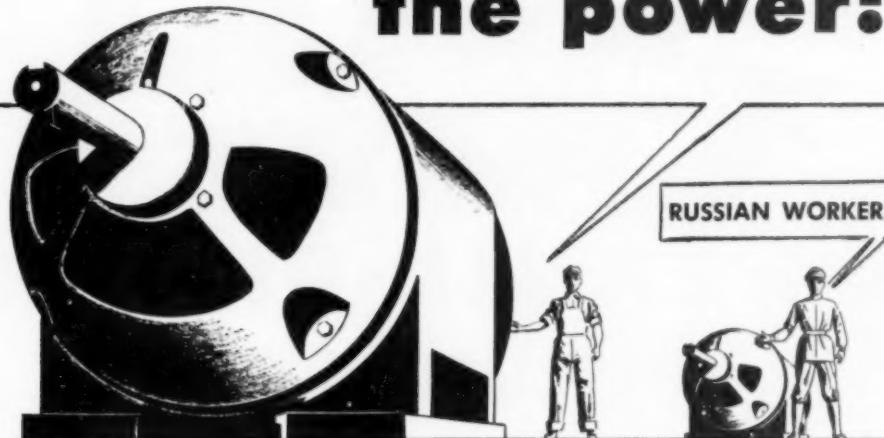
U. S. Rubber Co. Converts Port Neches, Texas, Plant

The PORT NECHES, TEXAS, GR-S synthetic rubber plant operated by Naugatuck Chemical Division, UNITED STATES RUBBER COMPANY, is being converted from "hot" to "cold" synthetic rubber and its production capacity increased from 70,000 long tons to more than 100,000 long tons annually.

"Cold" rubber is a form of GR-S synthetic made at the temperature of ice water. Demands for "cold" rubber are heavy throughout the rubber industry for use in the manufacture of tire treads, conveyor belts, molded industrial products and in liquid or latex form for foam rubber cushioning.

The conversion and expansion program is expected to be completed by late fall, barring any delivery bottlenecks in equipment and materials. It will cost approximately \$2,500,000 and will make the Port Neches plant the most modern in the industry, the company said.

AMERICAN WORKERS HAVE 7 times the power!



How does America do it?

Why does the American worker have the help of about 7 times as many kilowatt-hours of electric power as is available to the Russian worker?

How can we Americans produce over 40% of the world's goods and bring so much more of everything to everybody with less than 6% of the world's population? Why is the American output per-man-hour still growing faster and faster?

The answers cannot be laughed off nor are they hard to find. In the words of Ralph J. Cordiner, president of the General Electric Company: "The greatest impetus for forward movement still comes when individuals are free to plan and carry out their own ideas without government coercion or unnecessary regulation."

Including estimated expenditures in 1952, private industry in the last seven years will have invested over 150 billion dollars in new plant and equipment. This contrasts with Federal Government investment of not much more than 12 billion for similar purposes in the same period. Moreover most such Government expenses during the last three years have been allocated

to military and atomic projects.

Back of all this progress in private industry is the unique American system of competition—our kind of competition that continually stimulates Americans to make things better and to sell them better—and at lower prices.

In America we do not just compete for public office; we also compete in technology, competency of management, individual initiative and distribution—the latter including selling and advertising in all their varied forms.

Our kind of competition promotes the growth of more and more businesses and industries—and this means more jobs and expanding prosperity from which we all benefit.

"Planned economies" and other fancy theories are not for us. The American competitive system has given us the highest standard of living in the world. Let's all work to preserve it.

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THE COMPETITIVE SYSTEM DELIVERS THE MOST TO THE GREATEST NUMBER OF PEOPLE

Save TIME...POWER...MONEY with EAGLE-PICHER Insulations



SUPERTEMP BLOCKS

These are efficient insulating blocks manufactured from Eagle-Picher High Temperature Mineral Wool. They derive low thermal conductivity, high refractory value, and outstanding chemical and physical stability from this basic insulating material. Weight is approx. 22 to 24 lbs. per cu. ft. Designed for temperatures up to 1700 F.



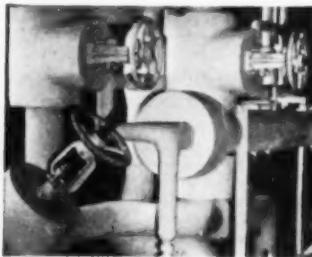
MINERAL WOOL BLANKETS

The answer to the problem of quickly and efficiently insulating flat or curved surfaces on larger types of heated equipment. Factory-made, these blankets are certified to meet rigid high standard specifications, offer unexcelled uniformity of mineral wool distribution. Withstand continuous exposure to temperatures as high as 1200 F. . . . offer maximum water repellence . . . resistance to steam, corrosive fumes, normal vibration.



SUPER "66" INSULATING CEMENT

A rust-inhibitive, super-adhesive insulating cement . . . offers exceptional coverage, extreme thermal efficiency. "Springy ball" structure—with small resilient pellets, each containing thousands of "dead" air cells—provides one of the most effective heat barriers known. Easily trowelled over all kinds of surfaces. Efficient up to 1800 F. . . . reclaimable where temperatures don't exceed 1200 F. Can be applied to any heated equipment.



ONE-COTE CEMENT

One-Cote provides both insulation and a smooth off-white finish coat. Unexcelled for coverage—100 lbs. covers approx. 40 sq. ft. one inch thick—Eagle-Picher One-Cote Cement is of uniformly high quality . . . quick setting, easy to handle . . . can be painted. This self-protected insulation withstands temperatures up to 1000 F.

MAXIMUM FUEL SAVINGS AND EXACT TEMPERATURE CONTROL WITH THESE EAGLE-PICHER INSULATIONS:

- Insulating Felts • Supertemp Block • Blankets • Loose Wool • Pipe Covering
- Stalastic • Stamastic • Insulseal • Finishing Cements • Insulating Cements
- Fireproofing Cement • Swetchek • Diatomaceous Earth Block.



**THE EAGLE-PICHER
COMPANY** Since 1843

GENERAL OFFICES: CINCINNATI (1), OHIO
Insulation products of efficient mineral wool—for a full range
of high and low temperatures. Technical data on request.

news (continued)

Union Iron Promotes Westin

LLOYD J. WESTIN has been appointed District Manager, with offices at Graybar Bldg., New York, N. Y., for UNION IRON WORKS, Erie, Pa., manufacturers of steam generating and process equipment. Mr. Westin replaces WIRT D. SEELEY who has resigned because of continued ill health.

**Sterling Electric Motors
—Birmingham and Houston**

STERLING ELECTRIC MOTORS, INC., has announced appointment of the following additional distributors: ALEX BORDERS MACHINERY COMPANY, 3724 First Avenue North, BIRMINGHAM 6, ALABAMA; and PETRO-CHEMICAL EQUIPMENT Co., Inc., P. O. Box 6705, 2438 South Boulevard, HOUSTON 5, TEXAS.

Alfred Wickliffe Joins Evans L. Shuff & Associates

ALFRED WICKLIFFE has joined the Atlanta, Georgia, office of EVANS L. SHUFF & ASSOCIATES, Sales Engineers. The company, with engineering offices at 310 Five Ivy Building, Atlanta 3, Georgia, serves industrial and utility plants throughout the Southeast.



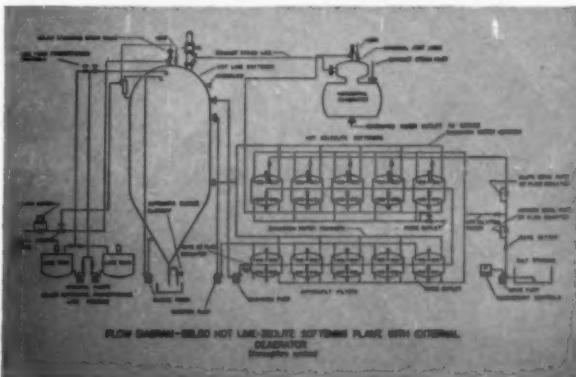
Alfred Wickliffe

Mr. Wickliffe, native of Long Island, New York, is an Industrial Engineering Graduate of the Georgia Institute of Technology. Before joining Evans L. Shuff & Associates, he served 5 years in the Air Force, and was with the General Shoe Corporation in the capacity of process engineer.

Evans L. Shuff & Associates represent leading stoker, piping and valve, heat exchanger, steam turbine, cooling tower, dust collector, gas burner, and coupling manufacturers.

PROCESSES FOR REMOVAL OF WATER IMPURITIES

The Hot BELCOLITE process combines two most popular methods of softening at a saving to you!

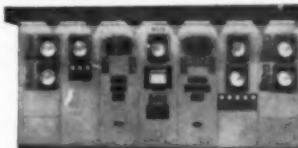


Performance records of Belco equipment are recognized throughout industry. If you are not familiar with the facts we would like to inform you . . . The customers we design and build for — the types of jobs where we specialize . . . we know you will be interested. Call us, today.

ADVANTAGES OF HOT BELCOLITE PROCESS

1. Zero Hardness in effluent	4. Requires less attention
2. Lowest cost method of silica reduction	5. Less skilled personnel
3. Lower alkalinity	6. Saves chemicals
7. Reduces capital investment	

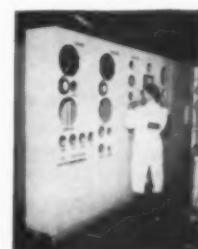
Automatic Control Panels for all processes in all industries



Belco specializes in automatic panel design and manufacture. Belco automatic panels control the world's largest silica removal demineralizing plant. They can control your process automatically, too.

Ask the Belco man!

We invite your consultation regarding all water condition requirements. Get acquainted with our friendly organization for authoritative assistance and close cooperation. Write for late descriptive bulletins.



Belco Industrial Equipment Division, Inc.

Belco

1000

WITH A DART YOUR
CLOSURE IS DROP-TIGHT
AND YOU KNOW IT!



Dart's two bronze seats maintain tight seal as long as in service — and as often as piping is changed. They can be taken off the line and reinstalled *over and over again!* They're made of non-corrosive bronze for greatest protection against corrosion and pitting.

Yes, and because a Dart's precision ground to a perfect sphere, the tight seal comes easily and stays tight without heavy wrenching or fuss.

Ends and nut of a Dart are practically indestructible — they're made of high test air refined malleable iron. Stress, stretching and wrench abuse are no problems with a Dart.

Specify Dart Unions. You'll get maximum possible work life, drop tight closures, repeat use and easier installing — ALL IN ONE "PACKAGE".

DART UNION COMPANY

Providence 5, Rhode Island

The Fairbanks Co. — Distributors
Boston New York Pittsburgh



news (continued)

Haartz-Mason—Sou. Repr.

The appointment of H. C. BIGLIN Co., Inc., 177 Harris St., N.W., ATLANTA, GA., as distributor for the Southern States for its three lines of electrical tape is announced by HAARTZ-MASON, INC., of Watertown, Massachusetts.

States within the territory of the Biglin Company include: KENTUCKY, VIRGINIA, TENNESSEE, NORTH CAROLINA, SOUTH CAROLINA, GEORGIA, FLORIDA, ALABAMA, MISSISSIPPI.

**Vulcan Steel Container Co.
Establishes Alabama Plant**

GORDON D. ZUCK, President, announces the organization of VULCAN STEEL CONTAINER CO., for the manufacture of steel pails in sizes from 1 to 12 gallons, and the establishment of a modern plant in BIRMINGHAM, ALABAMA, to serve the needs of the growing industrial South.



Gordon D. Zuck, President of Vulcan Steel Container Co., which has established a new manufacturing plant at Birmingham, Alabama.

This new plant was specially built and equipped solely for the manufacture of steel shipping containers for paint, chemical, food and petroleum products and complete warehouse stocks are maintained. Hi-bake linings which meet the requirements of a wide diversity of food and chemical products are also available.

Mr. Zuck is well-known throughout the steel shipping container industry where he has been closely associated with all phases of manufacture and marketing for the past 19 years. He served on the Steel Shipping Container Industry Advisory Committee of N.P.A. and has been active in a number of national associations devoted to the development of container specifications and their wider application to shipping needs and requirements.

Raybestos-Manhattan, Houston

RAYBESTOS-MANHATTAN, INC., Passaic, N. J., announces the opening of a new HOUSTON warehouse at 3012 Canal Street which offers larger quarters with ample stocking facilities for servicing the expanding Gulf Coast industrial area. The principal products carried will be conveyor belting, transmission belting, V-belts, industrial hose of all types, and asbestos and rubber packings.

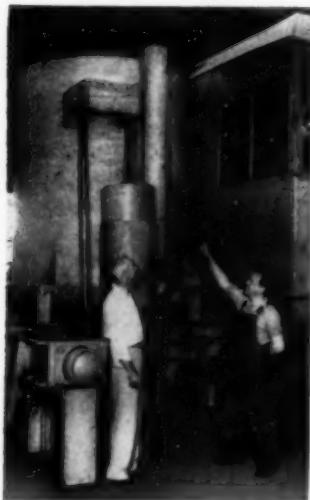
The Houston warehouse is in charge of M. C. NUGENT and operates under the Dallas Office, E. W. NAGEL, manager.

Alamo Iron Works Builds Coal Charging Car—Texas

ALAMO IRON WORKS, SAN ANTONIO, TEXAS, recently announced completion of a 130,000 pound coal charging car, believed to be the first ever constructed in the South.

According to MELROSE HOLMGREEN, president of the company, the mammoth machine will be used by a large coke producing plant in Northern Mexico to mechanically charge prepared coal into a battery of coke ovens.

After test trials, the machine will be partially disassembled and transported to Rosita, Coah., Mexico, to be installed at Cia Carbonifera de Sabinas, S. A., a property of American Smelting and Refining Company.



Partial view of the 130,000 lb coal charging car built by the Alamo Iron Works, San Antonio, Texas, for a coke producing plant in Northern Mexico. Edgar Tric, Jr., Advertising Manager of Alamo (left) is talking with George Marrow.



The Chemstrand Corporation—Pensacola, Florida

Here is a scale model of The Chemstrand Corporation's nylon filament yarn plant under construction north of Pensacola, Florida. Roy G. Hemminghaus, Plant Manager, emphasizes that the prototype when finished will be the first integrated nylon plant in this country.

Plant comprises two basic areas, the chemical area where the intermediates are produced and the textile area where the fiber will be spun, plus numerous other structures necessary for the project of this scope. Chemical area provides facilities to produce nylon salts required by the textile area for spinning nylon filament yarn. Heretofore, nylon salts have been produced at separate locations and shipped to spinning plants located elsewhere in the country.

Spinning building dominating the textile area is 600 x 750 ft. Chemical area will occupy a plot 800 x 1000 ft. Nylon products will range from fiber for hosiery to fiber for tire cord. Fiber is to be produced for many other wearing apparel and industrial applications. Plant is expected to employ upwards of 3,000 men and women when completed. At Decatur, Alabama, Chemstrand has its administrative headquarters, research center and Acrilan fiber manufacturing plant.

With the exception of the electrical equipment and speed reducers, the entire machine was fabricated in the San Antonio plant. Three direct current motors, totaling 115 hp, provide the power to operate the traction drive, drop sleeves and rotating feeders of the car. A total of 7 worm-gear speed reducers, including four units weighing approximately 3000 lb each, were used in the various drives. All structural parts of the car were welded except field connections necessitated by the size of the frame.

Wing Adds Agents, South-SW

L. J. WING MFG. CO., Linden, N. J., manufacturers of heating, ventilating and combustion equipment, has recently added the following sales representatives: EGELHOF ENGINEERS, INC., TULSA, OKLAHOMA; EGELHOF ENGINEERS, INC., HOUSTON, TEXAS; and INDUSTRIAL EQUIPMENT CO., ORLANDO, FLORIDA.

NGAA Announces Meeting Dates

Baker-Raulang—St. Louis

CLARENCE N. WHITE has been appointed to the sales engineering staff of FRED R. RAMSEN & ASSOCIATES, ST. LOUIS area distributor for the BAKER-RAULANG COMPANY.

Mr. White comes to the Ramsen organization from the St. Louis branch office of a materials handling equipment manufacturer; prior to that position, he was a sales representative for Gould-National Batteries, Inc.

The 32nd annual convention of the NATURAL GASOLINE ASSOCIATION OF AMERICA will be held April 29-May 1, 1953, in the Rice Hotel, HOUSTON, according to a recent announcement from NGAA TULSA headquarters. Plans for three regional meetings are now complete with the following dates: Blackstone Hotel, Tyler, Texas, October 24; Herring Hotel, Amarillo, Texas, November 21; and Scharbauer Hotel, Midland, Texas, February 27, 1953.

BELMONT

PACKINGS

for WATER...STEAM...OIL...



BELMONT 9 . . . for all hydraulic services from low pressures to extremely heavy duty, hot and cold water.

BELMONT 19 . . . for hot and cold water rods and plungers; low and intermediate steam rods.

BELMONT 30 . . . for high pressure steam rods, expansion joints, air, and gas.

for better sealing—LONGER

Regardless of the temperatures or pressures involved . . . no matter what the lading . . . *your* equipment maintenance costs can benefit from longer, more dependable packing life. If you're *paying* for the best—and you probably are—make sure you *get* it by specifying BELMONT Packings in formulations suited to your particular needs.

Don't make do with the next best—*insist* on BELMONT . . . available in a wide range of materials . . . hundreds of styles and types . . . through distributors everywhere.

For technical assistance on packing specifications, write direct—ask for Catalog #40 or detail your particular problems.

44-1



THE BELMONT
PACKING and RUBBER CO.
Butler and Sepviva Streets
Philadelphia 37, Pa.

FOR STEAM • WATER • OIL • GAS
SULFUR • ACIDS • AMMONIA

THERE'S A BELMONT PACKING FOR EVERY SERVICE

RINGS • SPIRALS • COILS • BELLS
SPROOLS • SHEETS • GASKETS

news (continued)

Lockett Announces Promotions

A. M. LOCKETT & COMPANY, LTD., St. Charles and Gravier Sts., NEW ORLEANS 7, LA., announces the promotion of F. ROBERT MENDOW to the position of Chief Engineer, and CHARLES J. WYLER to the position of Executive Assistant to the Vice President in Charge of Engineering.



F. Robert Mendow, Chief Engineer, A. M. Lockett & Co., Ltd.

Mr. Mendow, a graduate of Tulane University, joined Lockett as a Junior Engineer in 1931. He has served the company as draftsman and design engineer; contract estimator; field testing and service work; and in assisting in the promotion of boiler sales and engineering in the division offices.



Charles J. Wyler, Exec. Asst. to V.P. in Charge of Engineering, A. M. Lockett & Co., Ltd.

Mr. Wyler, also a graduate of Tulane, has served the company in a variety of work. Starting as a Junior Engineer, he did design drafting and at various times contract estimating and purchasing, contract sales work, and field inspection and test work. For some years he has been in charge of the Lockett Machine Shop, and has also specialized in the designing and estimating of the company's fuel oil



President C. Edward Morris



Typical Office Space



Powers Air Conditioning Control Panel

POWERS air conditioning control

Helps Insure Maximum Comfort and Efficiency in
Famous PAN AMERICAN LIFE INSURANCE CO. Building
NEW ORLEANS, LA.

In this unique louvered structure comfortable temperature and humidity conditions are assured regardless of the weather outdoors.

Employees are more efficient and alert, make fewer mistakes and turn out a better day's work in properly air conditioned work spaces.

Prominent insurance companies from coast to coast have found the year after year accuracy of dependability of Powers equipment a very profitable investment.

When problems of temperature and humidity control arise, contact Powers' nearest office. Our more than 60 years of experience gained in all types of prominent buildings may be helpful to you.

THE POWERS REGULATOR CO., SKOKIE, ILLINOIS

OFFICES IN OVER 50 CITIES

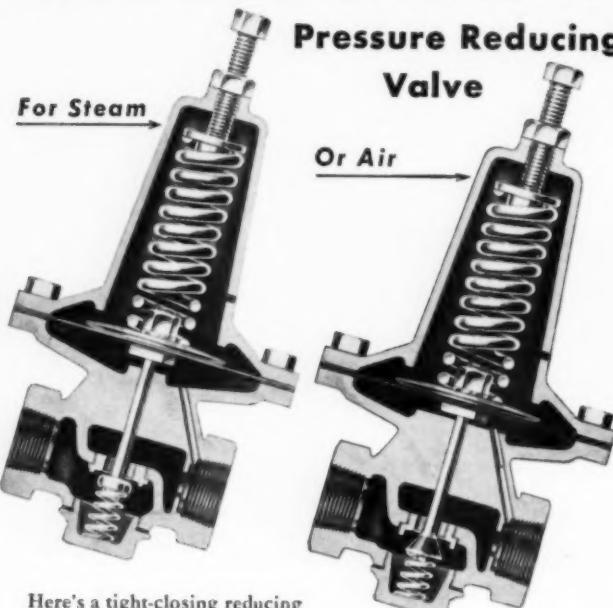
SEE YOUR PHONE BOOK

(882)





MASONEILAN No. 33



Here's a tight-closing reducing valve for small systems, that's built to take rough wear and tear yet give accurate regulation. Compact. Easy to service. Its sturdy dependability and simple construction minimizes maintenance . . . guarantees new economy for steam and air line operation.

Available for steam or air service, Masoneilan No. 33 pressure reducing valves come in sizes $\frac{1}{8}$ " to $\frac{3}{4}$ ". Reduced pressure ranges 2 — 20; 20 — 40; 40 — 100 psi. Maximum working pressure 200 psi.

Call your local Industrial Distributor for fast reliable service.

MASONEILAN

MASON-NEILAN REGULATOR CO.

1206 ADAMS STREET, BOSTON 24, MASS., U.S.A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise • Louisville • Salt Lake City • El Paso • Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham • New Orleans • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

news (continued)

pumping and heating sets for industrial applications. He is in charge of the installation and servicing of centrifugal air conditioning equipment.

A. M. Lockett & Company, contracting mechanical engineers, has branch offices in HOUSTON and DALLAS, TEXAS.

Allen-Bradley Co.—Florida

THE ALLEN-BRADLEY COMPANY, Milwaukee, Wis., manufacturers of electric motor controls, announce the appointment of ROBERT P. SMITH & COMPANY, 2031 Hendricks Ave., JACKSONVILLE, FLORIDA, as commission agent in Florida. The company is headed by Mr. R. P. Smith, and associated with him is Mr. C. R. Lee, who will be active in handling distributor accounts.

A branch office headed by Mr. C. M. Converse is located at 121 S. E. First St., Miami, Florida.

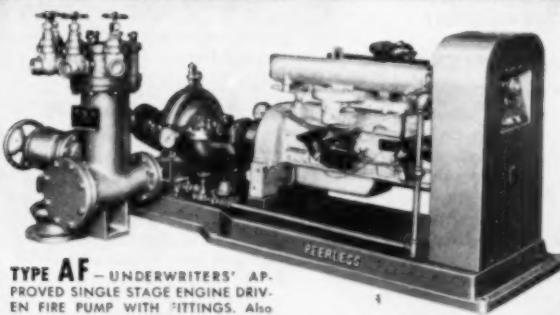
Gardner-Denver—Atlanta

GARDNER-DENVER COMPANY, Quincy, Ill., announced the appointment of ROBERT G. CALDWELL as district manager of the company's branch office in ATLANTA, GEORGIA. Mr. Caldwell succeeds H. G. LITTLE, former district manager of the Atlanta branch, and a member of the company since 1935. Mr. Little has bought an interest in the CENTRAL MACHINERY COMPANY of MIAMI, FLORIDA, a Gardner-Denver distributor.

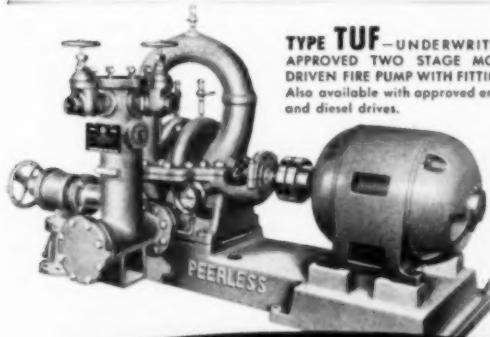


Robert G. Caldwell, new District Manager of the Atlanta, Georgia, Branch, Gardner-Denver Company.

Mr. Caldwell has been associated with the company for the past 12 years, as a salesman at the HOUSTON branch office and, for the past two years, as resident salesman with headquarters at CORPUS CHRISTI, TEXAS.



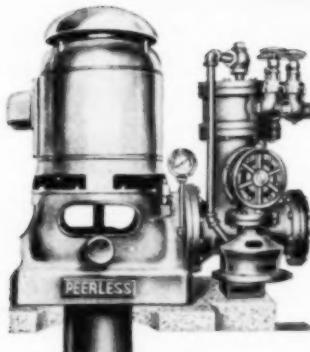
TYPE AF — UNDERWRITERS' APPROVED SINGLE STAGE ENGINE DRIVEN FIRE PUMP WITH FITTINGS. Also available with approved electric motor, steam turbine and diesel drives.



TYPE TUF — UNDERWRITERS' APPROVED TWO STAGE MOTOR DRIVEN FIRE PUMP WITH FITTINGS. Also available with approved engine and diesel drives.

Fully Approved

Both types meet the rigid requirements and regulations of National Board of Fire Underwriters, Underwriters' Laboratories, Chicago, and the inspection Department of the Associated Factory Mutual Fire Insurance Companies, Boston.



PEERLESS PUMPS

VERTICAL TURBINE TYPE — UNDERWRITERS' APPROVED MULTI-STAGE MOTOR DRIVEN FIRE PUMP WITH FITTING. Also available with approved right angle gear drive for stationary engines.

WRITE FOR DESCRIPTIVE BULLETINS

Peerless bulletins on horizontal type and vertical turbine type fire pumps are most comprehensive. Full engineering and performance data are given on all approved pumps and drivers and accessories. Mail the coupon today for your copies.

PEERLESS PUMP DIVISION FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles 31, California and Indianapolis 8, Indiana

Offices: New York, Atlanta, St. Louis, Phoenix, Fresno, Los Angeles; Dallas, Plainview and Lubbock, Texas; Tulsa, Albuquerque, N. M.

Distributors in Principal Cities: Consult your Telephone Directory.



Reliable and Permanent FIRE PROTECTION FOR EVERY COMMERCIAL AND INDUSTRIAL RISK —

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HORIZONTAL and VERTICAL TURBINE

Fire Pumps



You can place complete confidence in these approved Fire Protection Pumps

Both the Peerless horizontal types (Dayton-Dowd design) and the Peerless vertical turbine type fire pumps are pre-eminent in their field. Because of top quality construction, exacting engineering application and conscientious installation service they offer the best insurance of safety and satisfaction in all risks.

PEERLESS PUMP DIVISION
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Horizontal Type Fire Pumps Bulletin B-1500
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COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

news for the South and Southwest (continued)

E-M Appoints Shook, Atlanta

ELECTRIC MACHINERY MFG. COMPANY, Minneapolis 18, Minnesota, announces the appointment of W. R. SHOOK as Manager of its Southeast District office, Rm. 401, Georgia Savings Bank Bldg., 84 Peachtree St., N.W., ATLANTA 3, GEORGIA.

Mr. Shook is a graduate in electrical engineering of the Georgia Institute of Technology. He has had specialized engineering and application experience in large electric motors, generators and controls in the company's Cleveland office.

A-C Names Sou. Distributors

THE KOMP EQUIPMENT CO., LTD., 111 E. Pine St., HATTIESBURG, MISS., has been named a distributor for ALLIS-CHALMERS motors, controls and pumps; and the GALIS ELECTRIC REPAIR CO., 89 Keener St., MORGANTOWN, W. VA., has been appointed a certified service shop for Allis-Chalmers motors and controls.

The Komp Equipment Co. is serving the state of Mississippi south of and including Clarke, Jasper, Smith, Simpson, Copiah, and Jefferson counties.

The Galis Electric Repair Co. is serving Monongalia, Marion, Taylor, and Preston counties in West Virginia, and Greene county in Pennsylvania. The concern is owned by Alex Galis.

Yale & Towne—Tennessee

VINCENT F. FLAHERTY has been appointed plant manager of THE YALE & TOWNE MANUFACTURING COMPANY'S new lock and hardware factory now being constructed at GALLATIN, TENNESSEE.

Mr. Flaherty brings to his new post of plant manager 24 years of manufacturing experience at the company's Stamford Division. After graduation from the company's Apprentice School, Mr. Flaherty became a tool designer. He advanced successively to chief tool engineer, assistant superintendent of mechanical equipment and later to superintendent. Since May of this year he has served as special assistant to the general manager.

Ground was broken in July for the new plant. It will be a one-story building with a floor area of approximately 75,000 sq ft.

U. S. Steel Names Geisking and Challis—Birmingham

Appointment of MERYL H. GEISKING to the newly created position of assistant to president of TENNESSEE COAL & IRON DIVISION of UNITED STATES STEEL COMPANY was announced recently. Mr. Geisking is succeeded by DAVID A. CHALLIS, JR., formerly assistant general manager of sales for United States Steel Company in Pittsburgh, Pa.

Mr. Geisking is widely known throughout the steel industry. In his new post, he will be active in helping to promote the industrial development of the South, which constitutes TCI's market area, reaching from the Carolinas through Texas and Oklahoma.

Billings Names Lyons—S. E.

THE BILLINGS & SPENCER COMPANY, Hartford, Conn., manufacturers of Billings carbon and Vitalloy wrenches and shop tools and Vitalloy sockets, announces the appointment of J. B. LYONS as direct southern sales representative with headquarters in ATLANTA, GEORGIA.

Jack Lyons has lived in the South for many years and is well acquainted with the method of tool distribution throughout the territory.

He will represent the company in the VIRGINIAS, DISTRICT OF COLUMBIA, the CAROLINAS, GEORGIA, FLORIDA, ALABAMA, KENTUCKY, MISSISSIPPI and TENNESSEE, plus a portion of MARYLAND.

Westinghouse Lamp—W. Va.

As a means of building up the potential production of the WESTINGHOUSE LAMP DIVISION plant in FAIRMONT, W. VA., all manufacturing of tubular fluorescent lamps will be concentrated there. Machinery has been transferred from the Bloomfield, N. J., headquarters of the Lamp Division for the manufacture of Circline fluorescent lamps, Circlar decorative lamps and small-size fluorescent tubes used for special types of lighting.

New Geator Division—Va.

GEATOR CORPORATION, ARLINGTON 9, VIRGINIA, announces formation of its Geophysical Exploration Division. The new division will render engineering and exploration service in foundation, soil erosion and prospecting work, under the supervision

of E. R. SHEPARD. Well-logging and special electrical investigations are under direction of S. Krasnow.

Lion Oil Promotions—Ark.

J. B. ROGERSON, manager of manufacturing of LION OIL COMPANY, EL DORADO, ARK., has announced that HAROLD BIBLE has been promoted to the newly created post of assistant manager of manufacturing. Bible, who has been technical assistant to T. M. MARTIN, president, will assist in the management of Lion Oil's manufacturing activities which include an oil refinery and chemical plant at El Dorado and a new chemical plant now under construction near New Orleans.

RALPH LATIMER, who has been supervisor of the contract section of Lion's land department will replace Bible with the title of administrative assistant to the president.

Allegheny Names Brewer

NIXON A. BREWER has been appointed the new general manager of the ALLEGHENY INDUSTRIAL ELECTRICAL COMPANY, Pittsburgh, Pa. Mr. Brewer succeeds Mr. Henry B. Lee, III, who resigned his position and plans to move to Florida. Formerly of Washington, D. C., Mr. Brewer has been engaged in the electrical contracting business for the past 26 years.

Electric Machinery—Dallas

ELECTRIC MACHINERY MFG. COMPANY, Minneapolis, Minn., announces the addition of JOHN R. ROWE to the staff of their DALLAS, TEXAS, office. He will assist H. L. RENKING, Dallas District Manager.



John R. Rowe joins Dallas, Texas, staff of Electric Machinery Mfg. Co.

Mr. Rowe has had previous sales experience in the Southwest in the Tulsa, Oklahoma, office of the Elliott Company. Mr. Rowe joined the E-M Dallas office in May of this year.

dependable Heat that is
economical-efficient-
easy to use

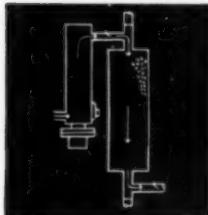
CHROMALOX ELECTRIC Circulation Heaters

for heating liquids
preheating fuel oils
heating compressed air
and other gases

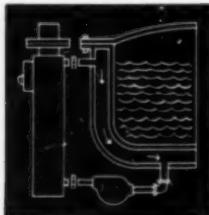
Production costs go down . . . operating efficiency goes up when you install economical CHROMALOX Circulation Heaters. They give you measured quantities of heat, at temperatures up to 750° F. that can be rapidly reached and accurately controlled. Dependable, around-the-clock operation, minimum maintenance.

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HERE ARE TWO TYPICAL APPLICATIONS



Heating Nitrogen to
Reactivate Alumina



Heating
Oil-Jacketed Kettle

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Electric Heat for Modern Industry

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advantages of
CHROMALOX
Electric Heaters

1. Efficient heat when and where you need it.
2. Economical initial cost; low installation and operating costs.
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For more information
Write for Catalog 50

It has complete data on many of the 15,000 Chromalox Electric Heaters and Equipment used in modern industry.



EDWIN L. WIEGAND COMPANY
7542 Thomas Boulevard
Pittsburgh 8, Pa.

Please send Catalog 50

Name _____

Company _____

Street _____

City _____

State _____

news (continued)

**Nelson Stud Welding Appoints
Reilly-Benton—New Orleans**

REILLY-BENTON COMPANY, INC., 2502 Poydras St., NEW ORLEANS, recently was appointed distributor for Nelson stud welding equipment and fastener studs for Southeastern LOUISIANA, Southern ALABAMA and all of MISSISSIPPI.

Reilly-Benton Company offers a complete sales, rental and repair service and stocks all types of Nelson roofing and siding fasteners and insulation studs. Stud welding guns, battery and power welding units are available for rental or purchase.

AL LUSCH, general manager of the New Orleans firm, has announced the appointment of A. A. BOUDOUSQUIE as Nelson Stud Welding specialist on his company's staff.

**Atlantic Steel Co. Appoints
O'Neill and Stevenson**

R. E. O'NEILL has been appointed assistant general manager of sales of the ATLANTIC STEEL COMPANY, ATLANTA, GEORGIA.



R. E. O'Neill, Assistant General Manager of Sales, Atlantic Steel Company, Atlanta, Georgia.

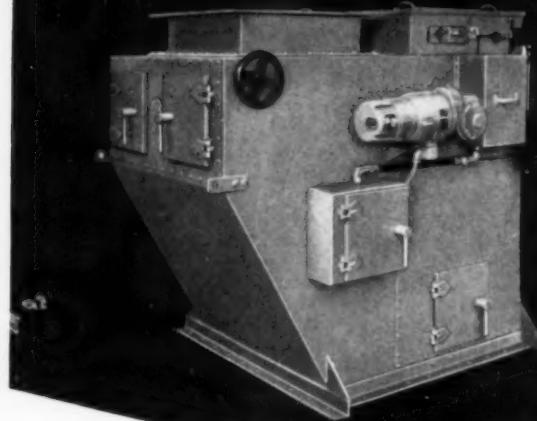
O'Neill has been with Atlantic Steel for 19 years, and has served in various operating and sales capacities. Prior to his acceptance of this new post, he was manager of the company's rolled products sales division.

In his new position, he will have responsibility for the administration of the sales department and of the various sales divisions handling mill products.

G. O. STEVENSON was named manager, rolled product sales division. Stevenson was formerly connected with Republic Steel Corporation, and has been with Atlantic Steel for five years.

NEW Richardson

H-39 COAL SCALE



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7 WAYS BETTER

1. 24½" x 24½" coal inlet opening—50% greater area—for maximum flow-ability of coal.
2. All wiring and controls outside coal chamber.
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That's why you just can't buy better than a Richardson

Get all the facts. Write for Bulletin 0552 today!

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MATERIALS HANDLING BY WEIGHT SINCE 1902

8610

**Jenkins and Cameron Head
Westinghouse Plant—Miss.**

DONALD E. JENKINS has been appointed plant manager of the WESTINGHOUSE ELECTRIC CORPORATION's new VICKSBURG, MISS., Lighting Division plant and THOMAS G. CAMERON has been named superintendent of manufacturing. The new plant manager comes to Vicksburg from the post of industrial relations manager for the Lighting Division.

The new multi-million dollar plant at Vicksburg is part of the 296 million dollar expansion program being carried out by Westinghouse. It will be the largest in the nation devoted exclusively to the manufacture of lighting fixtures. The plant, which will employ from 500 to 800 people when in full operation, is scheduled for completion by fall of 1953.

Elgin Softener—Southeast

ELGIN SOFTENER CORPORATION, Elgin, Ill., has announced the appointment of STEPHEN C. MAY as Sales Representative in GEORGIA, FLORIDA and lower SOUTH CAROLINA, with headquarters at 585 Sherwood Road, N.E., ATLANTA, GEORGIA.



Stephen C. May

Mr. May will handle the complete line of Elgin zeolite water softeners, filters, deionizers, boiler and process water conditioning systems, water treating chemicals and other water conditioning products.

As announced in the July '52 issue of SPI, Mr. May also represents the WARREN STEAM PUMP COMPANY, INC., Warren, Mass. manufacturers of a complete line of centrifugal, reciprocating and rotary pumps, in GEORGIA, SOUTH CAROLINA, parts of FLORIDA, NORTH CAROLINA and TENNESSEE.

Mr. May was graduated from Georgia Institute of Technology in 1925. He has had wide engineering and sales experience in combustion and hydraulics, his most recent position being as Vice President and General Sales Manager for Blackmer Pump Company.

GRAND OPENING

OCTOBER 31—NOVEMBER 1



You're invited...

**to Atlantic Steel Company's
Warehouse Division
Open House and Trade Show**

THERE'LL BE BIG DOINGS in Atlanta come October 31 and November 1.

That's when our brand-spanking new warehouse and facilities make their debut.

In celebration of this big event, we are holding a two day *Open House and Trade Show* for our customers, suppliers and other friends.

You'll see exhibits of the latest uses of stainless steels for the dairy, textile, pulp and paper industries and hospitals—as well as chemical, automotive and food industries. And there'll be exhibits of the products our warehouse customers make of expanded metals, cold drawn steel, and copper, as well as carbon steels.

There'll be a playground and movies for the kids and refreshments for all.

We want you to come and see for yourself how our new warehouse and facilities will enable us to serve our increasing number of customers better than ever.

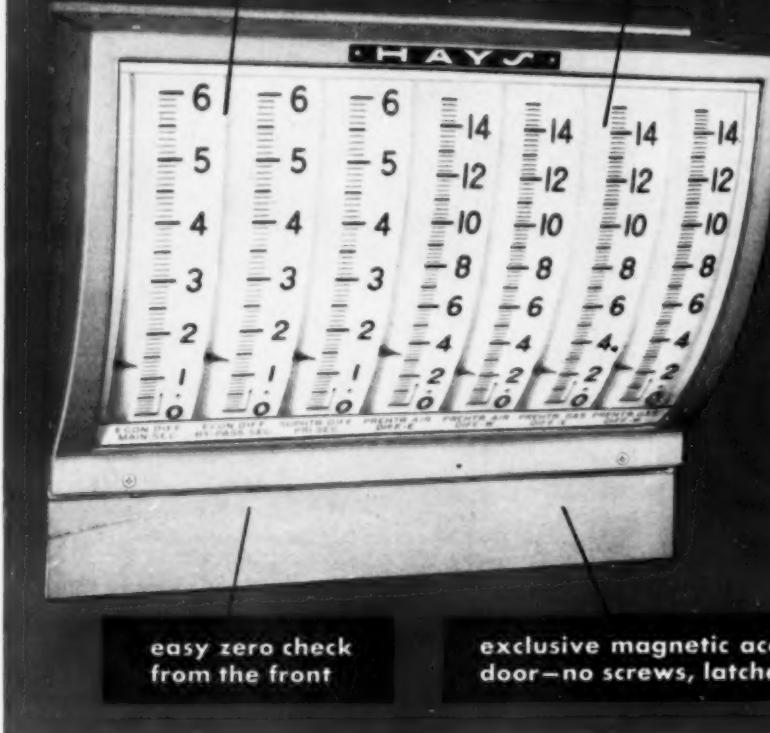
Service In Step With Southern Progress



a new draft gage!

easy to remove
separate units

easy to read—
no glare, no parallax



the HAYS Vertiscale

You designed this draft gage! You asked for these features! Accessibility from the front makes possible easy "one man" method of quickly checking zero. (The fast 3-way cock with test fitting is standard on the Hays Vertiscale).

Simple maintenance—individual units can be quickly removed for inspection or adjustment. Removal does not affect other units in the case, does not disturb calibration of unit being re-installed. No parallax—design eliminates reflections regardless of viewing angle. No glare—internal fluorescent lighting is standard.

You get all these values plus functional styling in the Hays Vertiscale draft gage!

Write today for full information on the Hays Vertiscale Bulletin 52-1060-210.

Automatic Combustion Control
Boiler Panels • Hays-Penn Flowmeters
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Combustion Test Sets • CO₂ Recorders
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CORPORATION

MICHIGAN CITY 4, INDIANA

news for the South and Southwest (continued)

Reynolds Metals Promotions

Three promotions to key positions in the manufacturing organization of REYNOLDS METALS COMPANY and a wholly-owned subsidiary, REYNOLDS ALLOYS COMPANY, were announced recently.

GEORGE L. SIMMS, formerly manager of the McCook Sheet Mill in Illinois, has been made General Manager of both the McCook Plant and Reynolds Alloys Company at LISTER-HILL, ALABAMA.

DONALD HIPP, formerly Manufacturing Vice-President of Reynolds Alloys, has been promoted to Vice-President and Manager of Reynolds Alloys facilities.

Silicone Exposition Resumed

Completely refreshed and refinished during a 3-month "summer vacation" the DOW CORNING SILICONE EXPOSITION will shortly resume its tour of showings in leading industrial areas of the country.

Although several new demonstrations and sample products have been

added, the huge display is basically the same as seen last year by over 17,000 executives and engineers, representing over 4600 different plants. Designed to show the properties of silicones, it also illustrates their usefulness as new engineering materials. Slanted at a technical and engineering level, the exposition is not open to the general public.

The exposition is scheduled to show in BALTIMORE, Md., Charles Room, Belvedere Hotel, Nov. 18-20; and at WINSTON-SALEM, N. C., at the main ballroom of the Robert E. Lee Hotel, Dec. 9-11.

Torrence Joins Emory Faculty

GEORGE P. TORRENCE, Illinois and Ohio business executive, has been appointed professor of business administration at EMORY UNIVERSITY, ATLANTA, GEORGIA. Torrence is a former president of the LINK-BELT COMPANY, Chicago, and of the CLEVELAND PNEUMATIC TOOL COMPANY, Cleveland, and served as a member of the inventory division of the War Production Board.

The new professor will offer Emory courses in sales management and business policy and management. Experienced in engineering, merchandising, and banking, as well as manufacturing, Torrence is a graduate of Purdue University.

New B&W Plant—Georgia

THE BARCOCK & WILCOX COMPANY has purchased facilities of a former shipyard from the Brunswick Port Authority at BRUNSWICK, GA., and will convert it into a plant to build boilers and related equipment.

The property involved consists of about 110 acres with about 250,000 square feet under roof and was formerly the J. A. Jones shipyard before being acquired by the Brunswick Port Authority in 1945. The plant has not been used since the end of shipbuilding and will require considerable rehabilitation. Production will start about the first of the year and build up to an employment of 400 by mid-1953.

This is the fourth new plant to be announced by the company in the past year, the other three being at WILMINGTON, N. C., WEST POINT, MISS., and PARIS, TEXAS.



Eliminate Air
In Gas Lines With

NORWALK DIAPHRAGM TYPE CHECK VALVE

Vertical Type in Sizes 3/8" thru 6"
Horizontal Type in Sizes 1/2" thru 6"

Norwalk Diaphragm Type Check Valves both Vertical and Horizontal, provide positive check against reverse flow of either gas or air. Rugged construction will stand back pressures to 50 lbs. Soft seat disc will seat freely when gas flows in desired direction or will seat tightly on equalized or back pressure. Valves for higher pressures supplied on special order.

NORWALK VALVE COMPANY
South Norwalk, Conn.

PIPING PROJECT?
You Can Specify
CORRIGAN COMPANY
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As do electric power utilities, prominent paper box board manufacturers, chemical companies, breweries, etc.

CONTRACTORS FOR:
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news for the South and Southwest (continued)

Durkee-Atwood—Atlanta

THE DURKEE-ATWOOD COMPANY of Minneapolis announces the appointment of JAMES E. WILLIAMS as the Southeastern district representative of its industrial division with headquarters in ATLANTA, GEORGIA. The company also announces the establishment of a warehouse stock of industrial V-belts at 450 Thurman Street in Atlanta.

Mr. Williams is a graduate of the University of Georgia. He was formerly employed for two and a half years by one of the large rubber companies.

Buchanan Expands—Ark., La.

BUCHANAN ELECTRICAL PRODUCTS CORPORATION, Hillside, New Jersey, has announced that WALTER CLINTON and his affiliate HARTWELL JALONICK,

who have for several years represented the company in the states of TEXAS and OKLAHOMA, will now also handle the Buchanan lines throughout ARKANSAS and LOUISIANA. For the time being Mr. Clinton will continue to operate with headquarters in Houston, Texas, with Mr. Jalonick in charge of branch headquarters in Dallas.

Nordberg Names Mead—Kans.

Appointment of MEAD ENGINE AND WELDING WORKS, STERLING, KANSAS, as an industrial distributor for Nordberg 4FS Diesel engines is announced by NORDBERG MANUFACTURING COMPANY, Milwaukee, Wisconsin.

Located centrally in the state, this firm will cover all of Kansas except the northeast section. The company specializes in oilfield and industrial engine repairs. Mead has excellent service facilities and a new office building with sales and parts room for the engines will be erected shortly.

Construction Under Way on New Missouri Power Plant

Foundations are nearly completed and structural work has begun on the CENTRAL ELECTRIC POWER COOPERATIVE at CHAMOIS, MISSOURI. THE KULJIAN CORPORATION of Philadelphia are the engineers of the \$3,500,000 project.

The initial installation consists of one boiler of 175,000 lb/hr steam capacity at 850 psi and 900 F total temperature. This outdoor pulverized coal-fired boiler will deliver steam to one 15,000 kw, four bleed extraction, hydrogen-cooled turbine. Ultimate station capacity is planned for four of these 15,000 kw units.

Alumi-Trim, Inc., Rome, Ga.

DONALD M. BUCHANAN, Vice-President and Sales Director of ALUMI-TRIM, INC., ROME, GEORGIA, announces the completion of new buildings and the installation of equipment for the new company.

The plant, with its complete facilities from Engineering, Design and Die Departments to the polishing, etching and anodizing of the finished extrusion will have a capacity of a million and a half pounds per month.

Alumi-Trim is equipped to make special designs of any type of Metal Alloy Extrusion but will specialize in stock items with a 24-hour shipping schedule to meet the rush demands of today's stepped-up production schedules.

BLAW-KNOX ELECTROFORGED®
STEEL GRATING

Westinghouse—Baltimore

E. R. NARY has been named assistant to the manager of the BALTIMORE DIVISIONS of the WESTINGHOUSE ELECTRIC CORPORATION, F. W. GODSEY, JR., manager, announced. In his new post Mr. Nary will be responsible for uniform manufacturing policies between the Electronics, X-Ray, and Air-Arm Divisions.

D. C. LEE has been named manager of industrial relations for the Baltimore Divisions. In his new post he will be responsible for the three Westinghouse Divisions in Baltimore—Electronics, X-Ray, and Air-Arm.

Sthw. Gas & Electric Expands Knox Lee Plant

Seventy-five thousand more kilowatts of electric power generating capacity will be added to the Knox Lee Power plant, located on Lake Cherokee in EAST TEXAS, according to FRANK M. WILKES, president of SOUTHWESTERN GAS AND ELECTRIC COMPANY.

"We have placed an order for a 75,000 kw unit," Wilkes said. "It will be installed as soon as it can be manufactured and we can get other mate-

rials to expand the present building. We hope to have this large unit in operation by 1955."

Addition of this large unit, rated at 60,000 kw and with a capability of 75,000 kw, will bring total capacity of the plant to 180,000 kw, one of the largest in the Southwest.

The large new unit will operate at higher efficiency, with 850 pounds of pressure at 1,000 degrees, compared with 900 degrees in the present units.

Wilkes also announced that work on the building for Southwestern's new power plant at Lone Star, Tex., began in September.

Texas Gas Transmission Corp. Expansion Program Approved

TEXAS GAS TRANSMISSION CORPORATION has been authorized by the Federal Power Commission to build a 408-mile pipe line that will carry additional natural gas to homes and industries in an area from Louisiana to Ohio.

The project will cost an estimated \$33.7 million. Arrangements for financing the expansion have been completed. The new line will enable Texas Gas to transport 240 million cu ft more of natural gas a day to

over 30 distributing utility customers in Louisiana, Arkansas, Mississippi, Tennessee, Kentucky, Indiana, Illinois, and Ohio.

Minneapolis-Honeywell Sales Engineers—South, Southwest

Thirty-four sales engineers were recently added to the field sales force of MINNEAPOLIS-HONEYWELL REGULATOR COMPANY's industrial division. The new appointees are all recent graduates from the company's industrial instrument training school in Philadelphia.

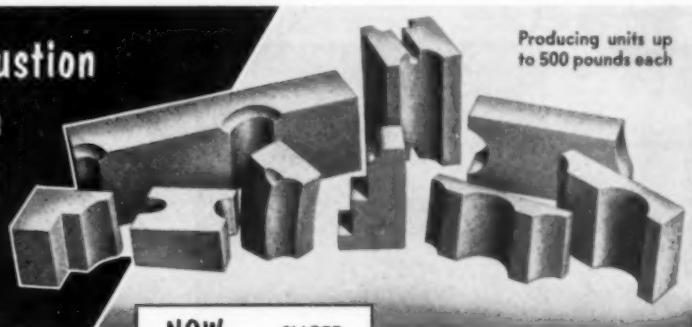
Assignments include: DON P. McADOO, BALTIMORE; ALBERT J. WALCEK, WASHINGTON; ROBERT H. BRANCH, ROANOKE; WILBUR A. DIXON, ATLANTA; STEPHEN M. KENNEDY, JACKSONVILLE; JAMES T. EMERSON, GREENVILLE; ROBERT W. MEYER, CINCINNATI; ROBERT G. STEEL, ST. LOUIS; and VINCENT T. COFFMAN, TULSA.

In addition, recent transfers include: JOHN H. MORRISON, GREENVILLE to KNOXVILLE; EDWARD NIKSTENAS, BIRMINGHAM to NASHVILLE; THOMAS H. JENKINS, CHICAGO to LOUISVILLE; and PAUL R. SHARADIN, service to sales, EL PASO.

Leading Combustion Engineers use **IRONTON** SPECIAL SHAPES

In two great new Carolina Power and Light plants, the special shapes for boiler installations are Ironton Kentucky Clay Refractories. These custom-made units meet specifications of Combustion Engineering—Superheater, Inc. and other industry experts who demand:

- ACCURACY IN DIMENSIONS
- HIGH P. C. E. CLAYS
- MIXES FORMULATED to fit service requirements
- CLOSE SUPERVISION of shape manufacture. We will gladly supply technical data and test samples. Write or call today.



Producing units up to 500 pounds each

NOW . . . SLICED for easy handling

IRONTON NOJOINT

the plastic
refractory
for built-to-
fit BOILER
SETTINGS and
FURNACE LININGS



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RELIABLE REFRACTORIES

THE **IRONTON**
FIRE BRICK COMPANY
IRONTON, OHIO

news for the South and Southwest (continued)

Stauffer Chemical Plant at Mobile Nears Completion

Completion of a new carbon bisulfide plant, being constructed for STAUFFER CHEMICAL COMPANY by THE H. K. FERGUSON COMPANY, on a 47-acre site north of MOBILE, ALABAMA, is expected late in the fall.

The plant, started in May of this year, consists of a 220 ft x 150 ft single-story building, approximately 43 ft high. In addition to the main process building, a single-story office building and change house is being erected.

The plant design incorporates the most modern and efficient devices for the control of air and water pollution.

BullDog Electric—W. Va.

BULLDOG ELECTRIC PRODUCTS CO., Detroit, has appointed KIRKIN L. KELLY to cover its HUNTINGTON, W. VA., territory, as field representative.

Mr. Kelly's experience in the field of electricity dates to 1938 when he

left the University of Kentucky to join the Kentucky and West Virginia Power Company. He was a commercial engineer for four years with the Appalachian Electric Power Co., of Huntington, W. Va., before joining BullDog.

King Engineering—S. E.

KING ENGINEERING CORP., Ann Arbor, Mich., announces the appointment of APPLIED ENGINEERING COMPANY with headquarters at 468 Carolina Ave., N.E., Orangeburg, South Carolina and regional offices at 500 Piedmont Ave., N.E., Atlanta, Georgia and 1605 Elizabeth Ave., Charlotte, North Carolina, as representative to serve NORTH CAROLINA, SOUTH CAROLINA, GEORGIA, ALABAMA and EASTERN TENNESSEE.

Applied Engineering Company will provide sales, installation, and engineering service on gages, manometers, and all other King engineering products.

New Rotary Lift Div., Tenn.

Formation of a new division to specialize in hydraulic lifts for industrial uses has been announced by ROTARY LIFT CO., MEMPHIS, TENN. This industrial division will be headed by JACK E. BURCH as sales manager.



Jack E. Burch, Sales Manager, Rotary Lift Co., Memphis, Tenn.

Mr. Burch moved to Memphis from St. Louis where he was division manager for Rotary. Prior to that time he had worked with the company in Chicago and Memphis.

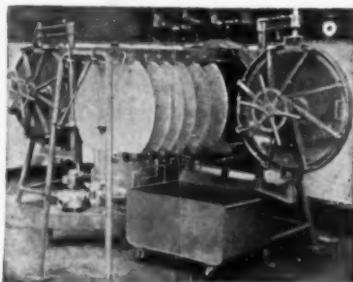
Dravo Has Weirton Contract

Contract for construction of new harbor facilities at the WEIRTON, WEST VIRGINIA, plant of WEIRTON STEEL COMPANY has been awarded to The Contracting Division of DRAGO CORPORATION, Pittsburgh.

A 400 ft long loading dock, consisting of five 54 ft diameter connected circular steel sheet pile cells, will be constructed near the upstream end of the harbor. At this location Weirton Steel Company will erect a new warehouse, 150 ft long by 60 ft wide, equipped with an overhead crane to load and unload barges and railroad cars.

In addition to the five dock cells, there will be one 30 ft diameter supporting cell, two 40 ft diameter ice breakers at the upstream end of the harbor, 14 barge mooring cells of 16 ft diameter, and four 40 ft diameter cells to divert sewer flow and support a new two-track railroad trestle leading to the dock.

To provide necessary depth in the harbor for barges, Dravo will remove some 27,000 cu yd of rock from the river bed. A special barge is being equipped to handle underwater drilling, loading and shooting of dynamite. Rock shot out will be placed as rip rap on the steep river bank. It will also be necessary to dredge about 25,000 cu yd of river deposits to deepen the harbor.



EMULSIFIED OR FREE OILS

Effectively Removed from Condensate with the

BLACKBURN-SMITH REFINER

OUTSTANDING ADVANTAGES

1. Breaks the tightest emulsion of oil in water
2. Reduces contamination to less than .1ppm.
3. Produces pure, clean condensate
4. Saves boiler tubes

Contaminated Condensate Formerly Wasted Can Now Be Re-Used After Filtration Through the Refiner

proved in service . . . saves heat units and fresh water . . . no backwashing . . . reduces boiler maintenance costs . . . improves boiler efficiency . . . simple and inexpensive to operate . . . requires little space.

Write for catalog. Engineering assistance gladly furnished

THE BLACKBURN-SMITH MFG. CO., INC.

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Subsidiary of Condenser Service & Engr. Co., Inc.

HOBOKEN 3-4425

RECTOR 2-9360



A 90-degree bend for a post outlet is cemented in the underground conduit installation. Light weight of the Tenite pipe permits W. M. Drinnon and Coy Arnold, Kingsport Utilities crewmen, to work in a standing position. One man can lift and carry six 20 ft lengths of 2-in. Tenite pipe.

Plastic Pipe Used by Kingsport Utilities as Underground Conduits for Power Lines

In a test project undertaken by Kingsport Utilities, Kingsport, Tennessee, in cooperation with Tennessee Eastman Company, a trial installation of extruded Tenite plastic pipe has been made in a Kingsport city block where the power company has put in a 5-light White Way. Tenite pipe in 20 ft lengths was used instead of the regular 5 ft conduit sections made from a compound of asbestos and cement.

Extruded Tenite plastic pipe was selected for test conduits because of its successful use in the oil fields and other industries. Advantages include flexibility, ease of installation, corrosion resistance, high impact strength, and light weight.

To prepare trenches, operator of mechanical ditch digger had only to scoop up clay and shale rock. Because of the flexibility of Tenite pipe, trenches did not have to have the exact straight-edge sides and base required for the usual rigid type of conduit. All that was necessary for joining was to brush on some thinner to soften the section ends, follow with Tenite II cement, and slip together. After drying for 30 min., joint was as strong as pipe itself.

It took a two-man crew only 20 min. to lay 247 of the 1,100 ft of Tenite pipe used in the project. Cellulose acetate butyrate Tenite is a product of Tennessee Eastman, Division of Eastman Kodak Company, Kingsport, Tennessee.

Luria Buildings—Georgia

Air Force Engineers of the Aviation Engineer Force are currently engaged in an important construction training project at MARIETTA, GEORGIA, under an arrangement worked out jointly by the Air Force and LOCKHEED AIRCRAFT CORP. The project provides training in steel erection and general building construction for officers and men of the 835th Engineer Aviation Battalion, a reserve unit.

The buildings, produced by the LURIA ENGINEERING COMPANY, will be used as warehouses that will cover about 30 acres of ground and will be built by the engineer-trainees from the ground up, according to J. McC. HILL, JR., southern district manager at Atlanta for the Luria concern, which specializes in the design and construction of standardized steel-frame structures. Note page 58 for additional data on Luria buildings.

JEFFERSON

300 LB. Trouble Free Unions for Tough Jobs

Jefferson Unions are made of Air Furnace Malleable Iron of an average tensile strength of 55,030 p.s.i., with a yield point of 36,000 pounds and an elongation of 15% in two inches.

Our seat rings are cut from seamless drawn brass tubing, free from all casting defects—sound and uniform always.

They are accurately tapped at all times; are carefully air tested and inspected before shipment, and each and every one approved only if they meet our rigid standards of inspection.

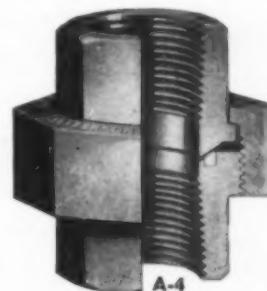
Slightly Higher Priced
But more than worth it.

See these outstanding features—

- ★ A ground ball joint to give leak-proof service
- ★ Octagonal with square corners fits any type of wrench
- ★ No gasket required, hence no maintenance problem
- ★ Hot-dip galvanized to Government Standard for corrosion resistance

Made in all thread sizes from $\frac{1}{4}$ " to 4" American Standard Taper Threads.

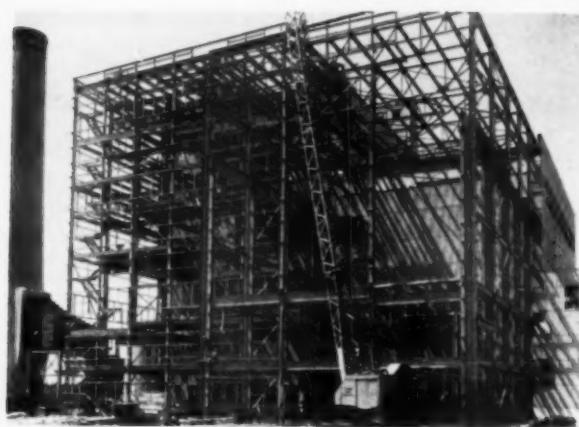
Also manufacture Excel 250 lbs and Master 150 lbs. All unions can be furnished with all-iron seats.



JEFFERSON UNION CO.

650 WEST 28th ST., NEW YORK 1.
79 GOODING ST., LOCKPORT, N.Y.
43 FLETCHER Ave., LEXINGTON, MASS.

news for the South and Southwest (continued)



Second Unit for Mississippi Power Company's Plant Sweatt Nears Completion at Meridian

Erection of steel for the second 58,000 hp generating unit at PLANT SWEATT near Meridian is now almost completed. S. L. MUTHS, vice presi-

dent and general manager of MISSISSIPPI POWER COMPANY, announced recently. This second major phase of construction is under contract to THE

STEEL CONSTRUCTION COMPANY of Birmingham.

The first unit of this huge steam electric generating plant began operation in June, 1951. At that time, L. P. Sweatt, president of the company, announced plans for this second unit. Construction actually got under way in October, 1951, with preparations for building the substructure.

In this phase of the construction several hundred concrete-filled steel pipe piles were driven to support the base slab which was constructed at ground level. This base slab, a tremendous block of reinforced concrete, in turn supports the building. During this time deep wells were being drilled and other miscellaneous construction was in progress. Substructure construction was by L. B. PRIESTER & SON, Meridian.

"Construction, at the present time, is almost on schedule," said Mr. Muths. "Fortunately structural steel had been obtained before the steel strike. However, we don't know yet to what extent equipment deliveries will be delayed. Present completion date is Mid-1953."

Completion of this second unit will bring generating capacity installed since the middle of 1947 to 176,000 hp.

EXTRA YEARS
OF MORE DEPENDABLE POWER
and at less cost per pound of steam

TODD BURNERS
GAS OR OIL

COMBUSTION EQUIPMENT DIVISION
TODD SHIPYARDS CORPORATION

81-16 45th Avenue

Elmhurst, Queens, N. Y.



Durkee-Atwood—Texas, Ky.

DURKEE-ATWOOD COMPANY, Minneapolis, has announced the appointment of the following companies as exclusive industrial V-belt distributors in their respective areas: MIDCAP BEARING SERVICE, CORPUS CHRISTI, SAN ANTONIO, and LUBBOCK, TEXAS; SOUTHWEST BEARING SERVICE, EL PASO, TEXAS; and GENERAL RUBBER & SUPPLY COMPANY, LOUISVILLE, KENTUCKY.

TEMCO Promotes Ridgley

FLOYD R. RIDGLEY, formerly assistant superintendent, has been promoted to superintendent at TEMCO AIRCRAFT CORPORATION, DALLAS, TEXAS. A native of Dallas, Ridgley joined the Texas Division of North American Aviation, Inc., in 1941 as a sheet metal and general assembly trainee. He rose to the position of general foreman before North American closed its Texas Division in 1945.

When Temco was organized in the North American plant, Ridgley joined the new company as a general assembly employee, rising through the ranks of foreman, general foreman, and assistant superintendent to his present position.

20th National Power Show—Grand Central Palace, New York, N. Y.—December 1-6th

The 20th National Exposition of Power & Mechanical Engineering will be held at the Grand Central Place, New York, N. Y., the first week in December. This date coincides with the annual meeting of ASME at the Statler Hotel where technical advances of revolutionary nature will be under review.

Engineers foresee a doubling of gas consumption within the next decade or two, and competitive improvements in the treatment and combustion of coal to enhance the position of that fuel in regions where it is readily available. Many improvements in power plant economy are being fostered to offset the rising tide of power costs, and many of these will immensely benefit the economy of the older and smaller installations.

One exhibitor will show centrifugal castings of special alloys for jet engines, including a difficult silicon-iron bronze cage blank, cast and hot worked, for anti-friction bearings to be used in jet aircraft.

Another exhibit will be focussed on a high pressure gate valve with breech-lock seal-welded body-bonnet

connection, typical of the high pressure, high temperature equipment being furnished to steam generating stations throughout the country. Some of the installations of this type are run at temperatures so high that the valves take on a dull red glow.

Development of a new 4-in. tube by a manufacturer of dust collectors permits smaller sized equipment to be assembled, which can be installed in plants where space limitations have prevented the use of such equipment in the past. The exhibit will feature an animated display showing fly ash being separated for re-firing.

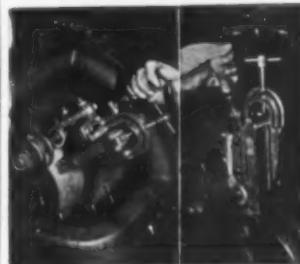
Another dust collector will be demonstrated in action, showing how dust is collected through the aid of 2,000 slotted perforations in each tube. An installation of this type has recently gone into use on a boiler capable of converting 500 tons of water per hour into steam. It handles 450,000 cfm of flue gas at 325 F with a draft loss of only 0.70 in. wg. and is installed ahead of an electrostatic precipitator, which is intended to trap the small proportion of fly ash that escapes the first collector.

The 20th National Power Show, Grand Central Palace, New York, Dec. 1-6, will feature 317 different kinds of products. Over 344 manufacturers will be represented by technical men on hand to show you the latest equipment, materials, and methods for power production, distribution, and use.



SOUTHERN POWER & INDUSTRY for NOVEMBER, 1952

MARTINDALE COMMSTONE HOLDERS



Hold Commstones rigid and free for concentric resurfacing of commutators and slotted rings while running at normal speeds in their own bearings. Interchangeable tools for 2" and 3" wide handle grinding jobs up to 4 1/4" wide.

BLOWERS AND VACUUM CLEANERS



MARTINDALE COMMSTONES AND COMMUTATOR GRINDING TOOLS



MICA UNDERCUTTERS FOR SLOTTING COMMUTATORS



Nine Motor Drives Types MARTINDALE PROTECTIVE MASKS



Weigh less than $1\frac{1}{2}$ ounce

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PLANT MAINTENANCE SHOW CLEVELAND

Jan. 19-22, 1953

Write for 64-page Catalog describing these and many other products for Industrial Maintenance, Safety and Production.

MARTINDALE ELECTRIC CO.
1334 Hird Ave. Cleveland 7, Ohio

news for the South and Southwest (continued)

Alabama Power Company Elects Lewis M. Smith President

MR. T. W. MARTIN announced the following changes in the executive personnel of ALABAMA POWER COMPANY, following a recent meeting of the Board of Directors.

JAMES M. BARRY resigned his position as president to become chairman of the Executive Committee of THE SOUTHERN COMPANY, and LEWIS M. SMITH, vice president and general manager of the company, was elected president succeeding Mr. Barry. E. W. ROBINSON, operating vice president, was appointed general manager of the Company.

Lewis M. Smith, native of Jefferson County, Alabama, has long been active in business, civic and religious activities. A graduate of the College of Engineering at the University of Alabama in 1916, he began his career with Alabama Power Company in 1923 as a draftsman. He became chief electrical engineer in 1939 and served in that capacity until 1944 when he became director of Public Relations. He was elected vice president

in 1945, general manager in 1949, and the same year became a member of the Company's Board of Directors.

Edgar W. Robinson, operating vice president of Alabama Power Company until his appointment as general manager, is a native of Columbus, Ohio. He was graduated from Ohio State University in 1911 as mechanical and electrical engineer and for the next two years was employed as research engineer for the Westinghouse Electric Corporation. From 1913 to 1923 he was electrical engineer for the E. W. Clark Management Corporation and in 1923 was employed by Alabama Power Company as assistant superintendent of distribution, and in 1936 he became operating manager. He was elected operating vice president in 1937 and became a member of the Board of Directors in 1940.

Allis-Chalmers Field Service

Organization of a field group to provide ALLIS-CHALMERS general machinery division customers throughout

the country with a maximum of fast and efficient service has been announced jointly by J. L. SINGLETON, vice president in charge of the division; C. W. SCHWEERS, vice president and director of sales, and J. F. ROBERTS, vice president and director of engineering.

The newly organized group is operating under the direction of Mr. Schweers. It will handle all service, repairs, breakdowns, and adjustments in the field. Delivery and erection of new equipment, major overhaul jobs, special service work, and major repairs, requiring special skills or long period manpower assignments will continue to be handled from headquarters at Milwaukee under the direction of C. B. Smith.

Regional service supervisors, for the South and Southwest named under the new setup are: C. P. SUYKERSUYK, ATLANTA, southeast region; and E. G. KIME, DALLAS, southwest region.

STATEMENT

of the ownership, management and circulation required by the Act of Congress of August 24, 1912, as amended by the Act of March 2, 1933, and July 2, 1946 (Title 39, United States Code Section 233) of SOUTHERN POWER AND INDUSTRY, published monthly at Philadelphia, Pa., for October 1, 1952.

State of Georgia, County of Fulton, ss.

Before me a Notary Public, in and for the State and County aforesaid personally appeared E. W. O'Brien, who having been duly sworn according to law, deposes and says that he is the Managing Director of SOUTHERN POWER AND INDUSTRY, and that the following is to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 2, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form to-wit:

1. That the names and addresses of the publisher, editor, managing director, and business manager are: Publisher, W. R. C. Smith Publishing Co., Atlanta 5, Ga.; Editor, Francis C. Smith, Atlanta 5, Ga.; Managing Director and Business Manager, Eugene W. O'Brien, Atlanta 5, Ga.

2. That the owners are W. R. C. Smith Publishing Co., a division of W. R. C. Smith, Atlanta, Ga.; O. A. Sharpless, Atlanta, Ga.; J. C. Cook, Atlanta, Ga.; W. J. Rooker, Atlanta, Ga.; T. W. McAllister, Windermere, Fla.; E. W. O'Brien, Atlanta, Ga.; Seba J. Jones, Atlanta, Ga.; Mrs. E. L. Philpot, Atlanta, Ga.; Richard P. Smith, Atlanta, Ga.; F. A. Roberts, Atlanta, Ga.; W. C. Herbert, Atlanta, Ga.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or any other security holders are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statement in the two paragraphs show the amount of the stock and the name and address of stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

E. W. O'BRIEN, Mg. Dr.

Sworn to and subscribed before me this 1st day of October, 1952.

SEBA J. JONES, Notary Public

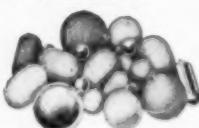
My commission expires Feb. 23, 1954.

Leading Processor SHORTENS OPERATION

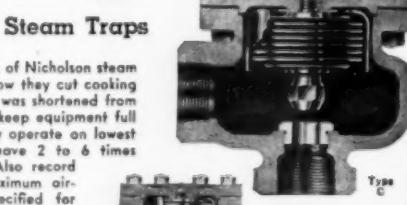
from 65 to 45 Min.

→ with Nicholson Steam Traps

Records of a recent installation of Nicholson steam traps, by a large processor, show they cut cooking time 30%; e.g., one operation was shortened from 65 to 45 min. Nicholson units keep equipment full of live steam because: 1) they operate on lowest temperature differential; 2) have 2 to 6 times average drainage capacity. Also record low for steam waste; and maximum air-venting capacity. Widely specified for preventing damage to thin gauges; eliminate cold blow in unit heaters.



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WILKES-BARRE, PA.



5 TYPES FOR EVERY PURPOSE—Size 1/4" to 2"; pressures to 250 lbs. BULLETIN 152.

HIGH-PRESSURE FLOATS — Stainless, monel, steel or plated steel. Welded. In all sizes and shapes; for operating mechanisms and as tanks for vessels. BULLETIN 658.

W. H. NICHOLSON & CO.
TRAPS • VALVES • FLOATS

WHAT'S NEW and Where to Get It

Free literature on the latest developments in equipment and supplies is offered by leading manufacturers. For your copy, circle the item number on one of the reader service post cards provided on pages 17 and 18.

B-20 HYDRAULIC CYLINDERS—Bulletin No. 701, 28 pages—Describes complete line of hydraulic cylinders; includes diagrams, photographs and charts to explain the different mounting types and capacities up to 1500 psi and 3000 psi working pressure.—LINDBERG ENGINEERING COMPANY, 2443 W. Hubbard St., Chicago 12, Ill.

B-21 SPEED REDUCERS—Engineering Bulletin No. 614, 20 pages—Contains engineering information and selection data on complete line of torque-arm speed reducers and the new Dodge overload release. Revised to include new torque-arm speed reducer with capacity range to 43 hp; diagrams show proper positioning for installation.—DODGE MANUFACTURING CORPORATION, Mishawaka, Ind.

B-22 INDUSTRIAL INSULATION—Catalog, 20 pages—Describes insulating materials which cover complete temperature range from 150 F to 1800 F. Shows insulating cement, block, blanket, felt, and pipe covering with thermal-conductivity graphs and heat loss charts. Includes application data.—BALDWIN-HILL COMPANY, 3112 Breunig Ave., Trenton, N. J.

B-23 CONVEYOR BELT LACING—Bulletin No. A-70, 2 pages—Lists long length conveyor belt lacing; contains application views; sizes, and list prices for

these separable fasteners for joining flat conveyor belts of all widths up to 96 in. and thicknesses up to 1/2 in.—FLEXIBLE STEEL LACING CO., 4601 Lexington St., Chicago 44, Ill.

B-24 HOLE SAWS—Bulletin, 6 pages—Describes hole saws for installation use in electrical, plumbing, heating, and air conditioning systems; for industrial maintenance and production. Gives specifications and price list for complete tool and extra blades.—MISENER MPG. CO., INC., 202-08 Walton St., Syracuse 2, N. Y.

B-25 HYDRAULIC POSITIONING—Bulletin 157, 12 pages—Describes the Farris Hydrotorque, a remote control hydraulic positioning system designed for applications in the aircraft, industrial, refinery, chemical, and other industries. Illustrated.—THE FARRIS HYDROTORQUE CORPORATION, 630 Commercial Ave., Palisades Park, N. J.

B-26 LOW SPEED MOTOR—Bulletin, 8 pages—Describes new improved right-angle worm-gear motor introduced as Type GW Syncrodrive. Discusses design, operation, and applications, with engineering data included. Illustrated in color.—U. S. ELECTRICAL MOTORS, INC., Box 2058, Los Angeles 54, Calif.

B-27 STOKERS—Brochure, 8 pages—Blindfold Stokers are illustrated and described, including blue prints of front view, side view and floor plan of ideal boiler room layout, and installation photographs.—CANTON STOKER CORPORATION, Andrew Place, S. W., Canton, Ohio.

B-28 PUMP APPLICATIONS—Tuthill Pump Guide—Chart on small pump applications lists the types of Tuthill pumps, services for which each is built, performance characteristics, types of packing, styles of mounting, and other data to aid in pump selection.—TUTHILL PUMP COMPANY, 939 East 95th St., Chicago 19, Ill.

B-29 AIR PURIFICATION—Bulletin 147-C, 16 pages—Illustrates and describes activated carbon air recovery or purification cells. Includes data on new type for odor removal applications other than those encountered in ordinary comfort conditioning, such as exhaust and intake problems.—W. B. CONNER ENGINEERING CORP., Shelter Rock Lane, Danbury, Conn.

B-30 INSULATION—Fiberglas Standards, 116-A7, 8 pages—"Insulations for Metal Buildings" discusses complete line of "Fiberglas" insulations for metal building needs, including preformed rigid boards, flexible Aerocore, roll blankets, and perimeter insulation. Illustrated with photographs.—OWENS-CORNING FIBERGLAS CORPORATION, Toledo 1, Ohio.

B-31 INDUSTRIAL CRUSHER—"AC" Bulletin, 8 pages—Illustrates from the inside out, all the special construction elements of the AC Crusher, including the Solling Ring Crushing Principle. Gives report of coal mine survey. Tabulates such data as speed, capacity, horsepower, weight and dimensions.—AMERICAN PULVERIZER CO., 1242 Macklind Ave., St. Louis 10, Mo.

B-32 EXHAUST FANS—Catalog DB-4-52, 8 pages—Describes Bifurcator fans specifically designed for exhausting fumes or gases which are abnormally hot, flammable or explosive. Gives design features, specifications, dimensions and certified capacities from 12 in. through 48 in. diameter handling up to 45,000 cfm of air.—DE BOTHEZAT FANS DIVISION, American Machine & Metals, Inc., East Moline, Ill.

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Equipment & Supplies (Starts on Page 8)

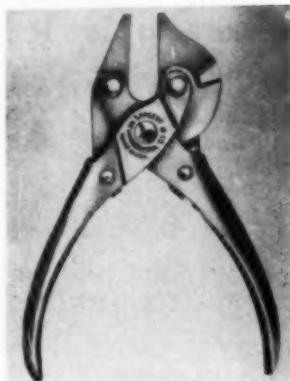
of the water that collects in the system, causing internal tank corrosion and uneven flame with shutdown possible if the water reaches the suction line. This is rectified by emulsifying the water with the oil so that it will pass out of the system without interfering with the normal operation of the burners. Or, the water can be precipitated to the bottom of the tank through the use of a different formula, and the water drawn out through a bottom drain.

The fuel oil is given a more uniform viscosity without affecting the oil's average viscosity or Btu content, nor is the pour point affected.

"Mechanical Hand" Plier

SARGENT & COMPANY, 45 Water Street, New Haven 9, Conn., announce their No. 102 "Mechanical Hand"—three tools in one: plier, cutter and wrench.

Checkered parallel jaws with a longitudinal "V" slot get a firm grip



Sargent & Company's parallel-action pliers. The 4½ in. size lists for \$2.19 at mill supply and hardware stores.

on wire in the manufacture of springs and electrical equipment. And the open throat permits running wires through the jaws from either end. The parallel jaws also make an ideal wrench for adjusting machinery, tightening nuts, picking up and holding parts, etc.

Compound, cam-action leverage in-

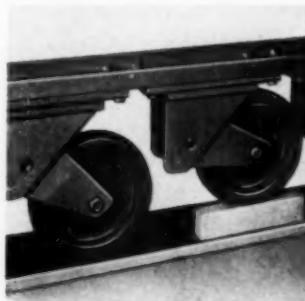
creases cutting power several times over the pressure applied by your workers' hands; takes the fatigue out of cutting heavy wire, pins, etc.

The "Mechanical Hand" is made of tough heat-treated nickel molybdenum alloy steel, nickel plated, in 4½-inch, 5½-inch, 6½-inch and 8-inch sizes. The 6½-inch plier is available with or without self-opening spring handles for high-speed production work with a minimum of fatigue.

Knee Action Caster Design

THE ALL STEEL WELDED M-9 TRUCK COMPANY, Rockford, Ill., has announced a new knee-action, shock-absorbing caster engineered for greater economy, efficiency, and safety in a wide variety of handling applications.

Called the Clark Duoflex Caster, it may be used to replace present wheeled equipment as well as with equipment designed for it. All standard wheels are interchangeable.



Deflection is more than 2 in. in the 10 and 12 in. sizes and more than 1½ in. in the 6 and 8 in. sizes. Casters rated up to six tons per caster, with deflection in excess of 3 in. are being designed.

According to the manufacturer, users may expect longer equipment life, faster handling, lower labor costs, and savings in caster maintenance, tire maintenance, replacement, and decreased product damage. Shimmy is said to be eliminated. These advantages result from the combination of high deflection with low dynamics and other features of design and construction.

The knee action has lifetime lubrication, and there is only one moving part. Springs are fully enclosed; construction is of the fabricated "boxed" type. Rated standard capacities are available now in small steps from 50 lb, or less if required, to 1500 lb, or more if required, per caster in the larger standard casters.

Bent or Straight

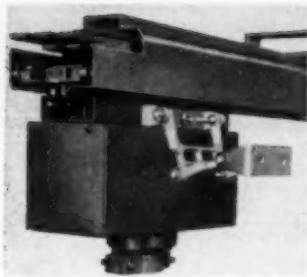
We have them in standard or extra gauges in all sizes. Accurately fabricated to any specification.

BOILER TUBE CO. OF AMERICA

McKEES ROCKS, PA. (Pittsburgh District)

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CHICAGO

FRED S. RENAUD & CO.
LOS ANGELES



Feedrail Corporation's trolley power distribution systems are rated 250, 375 or 500 amp, 250 volts d-c, 575 volts a-c, single or three phase.

Trolley Power Distribution

M-10 FEEDRAIL CORPORATION, 125 Barclay Street, New York 7, N. Y., announce the Heavy Duty Feedrail Trolley Busway System, providing a movable source of power for long runs of heavy moving electrical loads.

Power take-off trolleys run in a steel housing that safely encloses the current carrying bus bars. Unit facilitates lateral and transverse movement of heavy tonnage cranes and hoists. Portable welding equipment or other electrical apparatus can be quickly relocated and placed in operation immediately.

Standard factory-fabricated enclosed bus bar sections and accessories combine to make a run of any length. Door track is available for inserting trolleys quickly and safely without shutting off the power. Standardization allows for matching future plant growth or rearrangement of the electric distribution system.

Aluminum-Tin Cleaning Compound

M-11 OAKITE PRODUCTS, INC., 123A Rector St., New York, N. Y., manufacturers of specialized cleaning and allied products, have announced the development of Oakite Composition No. 80-A, a material designed for use wherever an excellent cleaner offering a high degree of safety to aluminum, tin or other soft metals is required.

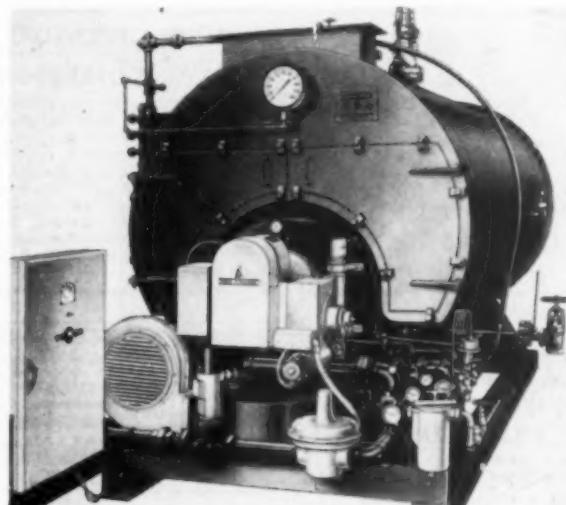
Oakite Composition No. 80-A, the manufacturers state, has wide applications on a broad variety of work in aircraft and metal plants where exceptional cleaning ability and thorough safety in use are essential. Material may be used in soak tanks or pressure spray washing machines, is readily soluble in hot water, rinses easily with hot or cold water. It does

not exhibit any tendency to foam excessively, it is claimed.

New Type Metal Degreaser

M-12 THE CURRAN ORDNANCE CHEMICAL LABORATORY, Lawrence, Massachusetts, creators of the GUNK line of products, has now developed a high-performance metal degreaser under the name of FLO.

Technically, this is a Flowlene degreasing solvent. It is intended for rapid solvent dry degreasing of parts and engine accessories and is especially adapted for cleaning electrical accessories. Product is said to be relatively odorless, is easy to handle, safe for use in all types of equipment designed for liquid phase solvents, does not tend to de-fat the skin and dries quickly, without leaving any film or sticky residue.



Boiler-Burner Units

M-13 KEWANEE-ROSS CORPORATION of Kewanee, Ill., and IRON FIREMAN MANUFACTURING COMPANY of Cleveland, Ohio, have announced a complete new line of boiler-burner units.

Each unit consists of an Iron Fireman packaged burner complete with all controls and a Kewanee Scotch boiler, completely assembled with its accessory equipment for oil, or oil and gas, or gas firing.

These boiler-burner units are available for high pressure steam and water in sizes ranging from 52 to 304 hp, 125 and 150 lb working pressure; also for low pressure 15 lb steam or 30 lb water, in sizes from 1,808,000 Btu to 8,400,000 Btu. They may be fired with No. 6 or lighter fuel oils, gas (either high pressure or as low as 2 oz), or a combination of both fuels. The line thus covers a wide variety of commercial and industrial applications for heating, power and process steam.

The boiler portion of the unit is completely assembled with all of its essential elements, tested, mounted on

Each unit consists of an Iron Fireman packaged burner complete with all controls and a Kewanee Scotch boiler, completely assembled with its accessory equipment for oil, or oil and gas, or gas firing.

substantial steel skids and shipped direct from Kewanee to the job site.

The burner portion of the unit, including all controls and forced draft air supply, is completely assembled, wired and factory tested. Matching connections are provided, so that when this packaged assembly, as shipped from Iron Fireman's Cleveland plant arrives on the job, it can be connected to the boiler in a very short time. All refractories are integrally mounted at the factory, thus reducing to an absolute minimum the amount of field work required in placing this combination boiler-burner unit into service.

The units are designed for forced draft operation, eliminating the necessity of a high stack. Provision need only be made for a small vent extending above the roof. Complete specifications will soon be available.

CLASSIFIED ADS

Classified rates are net, payable in advance, each month. Rates are based on column inch, with three columns per page, 10 inches per column, column width 2 1/4 inches—a total of 30 column inches per page.

CLASSIFIED RATES

\$6.00 per column inch

\$12.00 per column inch displayed

Rates quoted on special types of repeated advertisements.

Special "Position Wanted" advertisements submitted by individuals seeking employment, 10 cents per word per insertion, payment with order, minimum charge \$1.00. When worded, Box Number, address, c/o SOUTHERN POWER & INDUSTRY, 806 Peachtree Street, N.E., Atlanta 5, Georgia, count as eight words.

SURPLUS GATE VALVES—NEW

4—6" Jenkins Fig. 1010 Flanged, Rising stem 300#
4—12" Jenkins Fig. 1010 Flanged, Rising stem 300#
1—6" Jenkins Fig. 204 Flanged, Non-rising 250#
2—6" Jenkins Fig. 204 Flanged, Non-rising 250#
2—6" Crane Flanged, Rising stem 250#
1—4" Jenkins Fig. 204 Flanged, Rising stem 250#

These valves available for immediate delivery. Write

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ADVERTISER'S INDEX

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A

Adams Co., Inc., R. P.	•
Advertising Council, Inc.	•
Air Preheater Corp.	•
Allen-Bradley Co.	•
Allen-Sherman Hoff Co.	29
Allis-Chalmers Mfg. Co.	•
Second Cover and 39	•
Aluminum Co. of America	•
American Blower Corp.	77
American Coal Burner and Wood Stoker Co.	•
American Engineering Co.	•
American Monorail Co.	85
American Pulverizer Co.	41
Amer. Iron Works	•
Anaconda Wire Cable Co.	25
Anderson Co., V. D.	•
Armstrong Machine Works	34
Atlanta Envelope Co.	•
Atlantic Steel Company	109
Atlas Valve Co.	•

B

Babbitt Steam Specialty Co.	125
Babcock and Wilcox (Boilers)	•
Babcock & Wilcox Refractory Division	11
Bailey Meter Co.	47
Baldwin-Hill Co.	93
Belco Industrial Equip. Div.	38
Bell & Zoller Coal Co.	38
Bentley Packing & Rubber Co.	102
Bird-Air Co.	44
Bituminous Coal Institute	•
Blackburn-Smith Mfg. Co., Inc.	114
Blaw-Knox Co. (Grating)	112
Blaw-Knox Co., Power Piping Division	•
Boiler Tube Co. of America	120
Buffalo Forge Co.	39
Bunting Brass & Bronze Co.	•
Bussmann Mfg. Co.	•
Byron Jackson Co.	•

C

Carolina Refractories Co.	125
Chapman Valve Mfg. Co.	48
Chelsea Fan and Blower Co., Inc.	48
Chicago Bridge & Iron Co.	46
Chicago Electric Co.	122
Childers Mfg. Co.	122
Clarkson Fan Co.	•
Classified Ads	122
Cleaver-Brooks Co.	•
Cochrane Corporation	•
Cole Mfg. Co., R. D.	•
Combustion Eng'r. Superheater, Inc.	5
Combustion Equipment Division Todd Shipyards Corp.	•
Condenser Service & Engineering Co., Inc.	116
Continental Gin Co.	50
Cooper-Bessemer Corp.	78
Copes-Vulcan Division Continental Foundry & Machine Co.	37
Coppus Engineering Corp.	•
Corrigan Co.	111
Crane Company	43
Crane Packing Co.	125
Cyclotherm Corp.	•

D

Dart Union Co.	100
DeLaval Steam Turbine Co.	•
Deming Company	•
Detroit Stoker Co.	•
Dollinger Corp.	•
Dowell, Inc.	•
Dravo Corporation Counterflow Heater	36
Drew & Co., Inc., E. F.	•

E

Eagle-Picher Co.	98
Edward J. Alves, Inc.	•
Elgin Softener Corp.	•
Elliott Co.	•
Emerson Elec. Mfg. Co.	122
Electric Service Co.	122
Engineer Co.	•
Erie City Iron Works	7
Ernst Water Column & Gage Co.	122
Everlasting Valve Co.	•

F

Fairbanks, Morse & Co.	•
Farrell-Cheek Steel Co.	•
Finnigan, J. J., Co., Inc.	125
Fisher Governor Co.	•
Fiske Bros. Refining Co., Lubriplate Div.	•
Flexible Steel Lacing Co.	•
Flexible Tubing Corp.	•
Fly Ash Arrestor Corp.	•
Foster Engineering Co.	•
Foster Wheeler Corp.	•
Fryck Company	93
Fyr-Feder (Solid Fuel Stoker) Engineers	•

G

Garlock Packing Co.	•
General Coal Co.	•
General Electric Co.	•
Gilbert Associates, Inc.	•
Graver Water Conditioning Co.	•
Grinnell Co., Inc.	•
Gulf Oil Corp.	•

H

Hagan Corp. (Combustion Control)	•
Hagan Corp. (Boiler Water Conditioning)	2
Hayes Corp., The	116
Homestead Valve Mfg. Co.	45
Hotel Pittsburgher	126

I

Ingersoll-Rand Co.	•
Iron Fireman Mfg. Co.	28 and 89
Ironton Fire Brick Co.	113

J

Jefferson Union Co.	48
Jeffrey Mfg. Co.	•
Jenkins Bros.	Third Cover
Jerguson Gage & Valve Co.	•
Johns-Manville, Inc.	•

K

Kennedy Valve Mfg. Co.	•
Kerrigan Iron Works, Inc.	96
Kewanee-Ross Corp.	89
Kirk & Blum Mfg. Co.	123

L

Ladish Co.	35
Leslie Co.	•
Liberty Engineering & Mfg. Co.	123
Lindberg Engineering Co.	123
Link-Belt Co.	40
Lubriplate Division, Fiske Bros. Refining Co.	•
Lunkensheimer Co.	•

M

Manning, Maxwell & Moore, Inc.	•
Manzel, Inc.	•
Marley Co., Inc.	•
Martindale Electric Co.	117
Mason-Nelan Regulator Co.	126
Mercoid Corp.	•

N

National Airoil Burner Co.	119
National Aluminate Corp.	1
National Business Publications	97
National Tube Co.	•
National Valve & Mfg. Co.	12
Niagara Blower Co.	•
Nicholson & Co., W. H.	118
Norwalk Valve Company	111

O

Oakite Products, Inc.	•
Okonite Co.	23 and 119
Orr & Sembower, Inc.	•

P

Pacific Pumps, Inc.	91
Peerless Boiler & Engineering Co.	123
Peerless Pump Division Food Machinery & Chemical Corp.	105
Piedmont Products Company	•
Pipe & Tubular Products, Inc.	27
Pittsburgh-Corning Corp.	•
Pittsburgh Piping & Equipment Co.	•
Porter, Inc., H. K.	94
Powell Co., Wm.	31
Powers Regulator Co.	102
Pritchard Co., J. F.	•
Proportioneers, Inc.%	•

R

Raybestos-Manhattan, Inc., Packing Division	•
Peterson Gauge Column Co.	•
Republic Flow Meters Co.	•
Republic Rubber Division (Lee Rubber & Tire Corp.)	•
Richardson Scale Co.	168
Riley Stoker Corp.	•

S

Sarco Co., Inc.	26
Shell Oil Co., Inc.	19
Sinclair Refining Co.	•
Smooth-on Mfg. Co.	•
Southern Natural Gas Co.	•
Southern Railway System	22
Sprague Electric Co.	•
Springfield Boiler Co.	13
Squires Co., C. E.	•
Standard Oil Co. of Ky.	•
Sterling Electric Motors, Inc.	95
Subox, Inc.	•
Superior Combustion Industries, Inc.	•
Swartwout Co., The	•

T

Taylor Forge & Pipe Works	•
Terry Steam Turbine Co., The	•
Texas Co.	•
Tnemec Co., Inc.	•
Todd Shipyards Corp., Combustion Equipment Division	116

U

Union Asbestos & Rubber Co.	•
U. S. Hoffman Mchyr. Corp.	•
U. S. Treasury	•
United States Steel Co.	•

V

V-Belt Engineering Co.	•
------------------------	---

W

Warner Electric Co.	•
Walworth Co.	87
Want Ads	122
Warren Steam Pump Co., Inc.	•
Webster Engineering Co.	20
Western Precipitation Corp.	•
Washington Electric Corp. (Apparatus Div.)	•
Wheeler Mfg. Co., C. H.	•
Wickes Boiler Co.	•
Wiegand Co., Edwin L.	107
Wiggins Co., John B.	119
Wilson, Inc., Thomas C.	126
Wing Mfg. Co., L. J.	•
Wittmann, Inc.	•
Worthington Corporation	81 and 83
Yarnall-Waring Co.	14, 15 and 79



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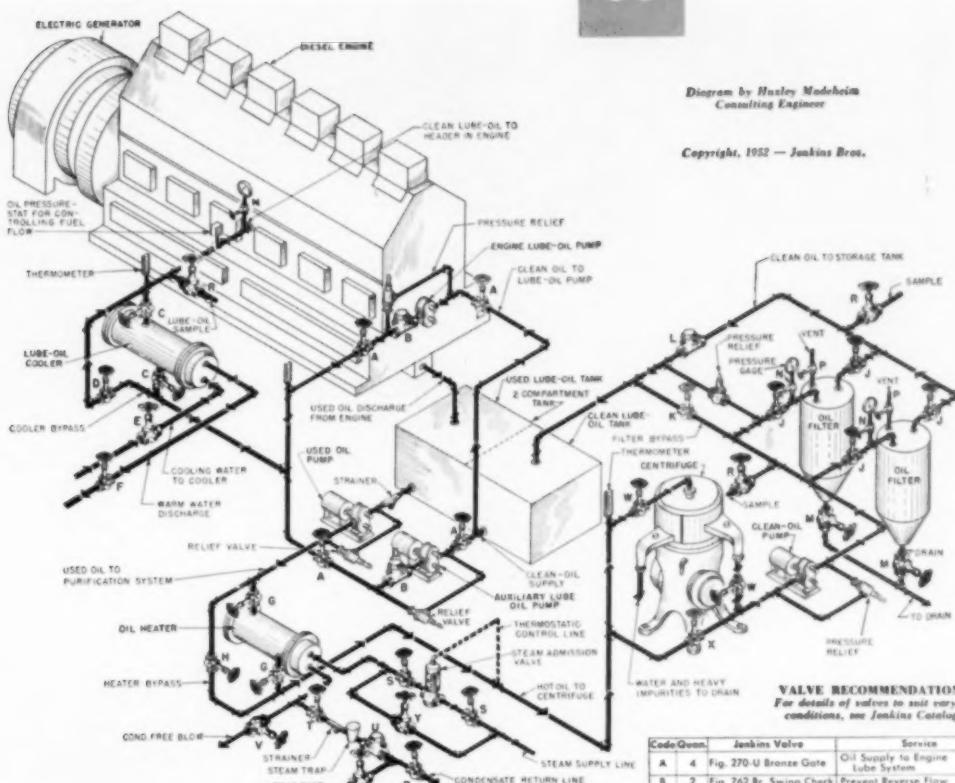
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Diagram by Husley Madehain
Consulting Engineer

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VALVE RECOMMENDATIONS
For details of valves to suit varying conditions, see Jenkins Catalog.

Code/Size	Jenkins Valve	Service
A 4	Fig. 950 Bronze Globe	Oil Supply to Engine Lube System
B 2	Fig. 762 Br. Swing Check	Prevent Reverse Flow
C 2	Fig. 270-U Bronze Gate	Lube Oil Cooler Shut-off
D 1	Fig. 270-U Bronze Gate	Lube Oil Cooler Manual Bypass
E 1	Fig. 950 Bronze Globe	Cool Water Supply to Lube Oil Heater
F 1	Fig. 270-U Bronze Gate	Water Discharge Shut-off
G 2	Fig. 270-U Bronze Gate	Oil Heater Shut-off
H 1	Fig. 270-U Bronze Gate	Oil Heater Manual Bypass
J 4	Fig. 270-U Bronze Gate	Oil Filter Shut-offs
K 1	Fig. 270-U Bronze Gate	Oil Filter Manual Bypass
L 1	Fig. 762 Br. Swing Check	Prevent Reverse Flow
M 2	Fig. 950 Bronze Globe	Filter Drains
N 3	Fig. 743 G Br. Needle	Pressure Gauge Control
P 2	Fig. 950 Bronze Globe	Filter Air Vents
R 3	Fig. 950 Bronze Globe	Oil Sampling Take Offs
S 2	Fig. 270-U Bronze Gate	Steam Supply to Oil Heater
T 2	Fig. 270-U Bronze Gate	Condensate Shut-offs
U 1	Fig. 762 Br. Swing Check	Prevent Condensate Backflow
V 2	Fig. 950 Bronze Globe	Condensate Bypasses Free Bleed from Test
W 2	Fig. 270-U Bronze Gate	Centrifugal Shut-off
X 1	Fig. 270-U Bronze Gate	Centrifugal Bypass
Y 1	Fig. 956 Bronze Globe	Bypass on Automatic Steam Valve

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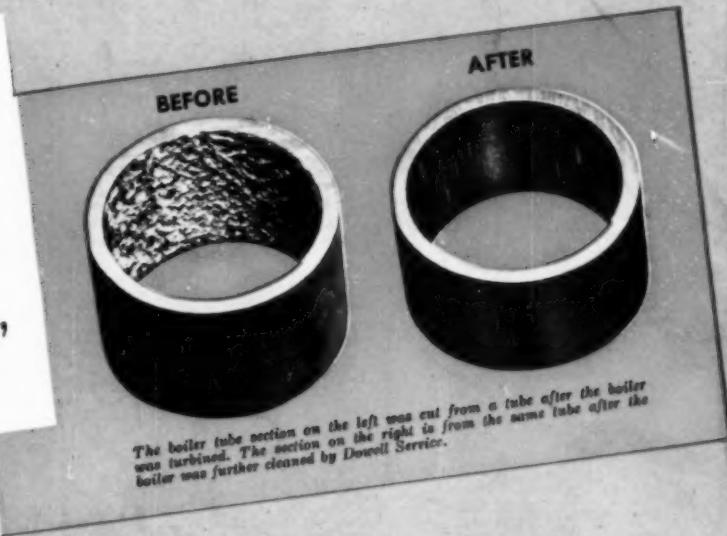


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